© Entomological Society of Indochina
អ្នកជំនាញខាងជាណកសាស្ត្រឥណ្ឌូចិន
The Indochina Entomologist
OPEN ACCESS
Revision
ICE, 1 (98): 995–1030 (2025)
ISSN (Online) 3065-1107
www.indochinaentomologist.com

https://doi.org/10.70590/ice.2025.01.98
http://zoobank.org/urn:lsid:zoobank.org:pub:0383FA87-E5D9-4832-A3D7-38E81FBD3081

A revision of the *Ischnopopillia pusilla* species group (Coleoptera: Scarabaeidae: Rutelinae)

Ming-Zhi ZHAO[1] & Guido SABATINELLI[2]

[1]Museum A. Koenig, Leibniz Institute for the Analysis of Biodiversity Change, Adenauerallee 127, 53113 Bonn, Germany;
https://orcid.org/0000-0002-3158-6177; zhaomzhai@gmail.com

[2]Muséum d'histoire naturelle, route de Malagnou 1, 1208 Geneva, Switzerland;
https://orcid.org/0000-0001-7197-0619; g.sabatinelli@hotmail.com

Abstract: The *Ischnopopillia pusilla* species group from mainland Asia is defined morphologically. Six new species are described, including *I. bisignata* Zhao, **sp. nov.**, *I. chenchangchini* Zhao, **sp. nov.**, *I. laticollis* Zhao, **sp. nov.**, *I. sabatinellii* Zhao, **sp. nov.**, *I. zhengi* Zhao, **sp. nov.**, and *I. zianii* Zhao & Sabatinelli, **sp. nov.** In addition, *Adoretosoma parvula* Benderitter, 1929, *Anomala dohertyi* Arrow, 1917, and *Anomala parva* Arrow, 1917 are transferred to the genus *Ischnopopillia*. Lectotypes are designated for *Adoretosoma parvula*, *Anomala dohertyi*, *A. parva*, and *A. pusilla* Arrow, 1912. The *I. pusilla* group presently comprises 14 species.

Keywords: Anomalini, Bhutan, China, Himalaya, India, new species, new combination

角斑修丽金龟种组 *Ischnopopillia pusilla* species group 分类修订(鞘翅目：金龟科：丽金龟亚科)

赵明智 [1] & Guido SABATINELLI[2]

[1] 柯尼希博物馆，莱布尼茨生物多样性变化分析所，阿登纳大街 127 号，波恩 53113，德国
[2] 自然历史博物馆，马拉纽路 1 号，日内瓦 1208，瑞士

摘要：本文在形态上定义了分布于亚洲大陆的角斑修丽金龟种组 *Ischnopopillia pusilla* species group，并描述了六个新种，即条斑修丽金龟 *I. bisignata* Zhao, **sp. nov.**，陈氏修丽金龟 *I. chenchangchini* Zhao, **sp. nov.**，宽胸修丽金龟 *I. laticollis* Zhao, **sp. nov.**，萨氏修丽金龟 *I. sabatinellii* Zhao, **sp. nov.**，郑氏修丽金龟 *I. zhengi* Zhao, **sp. nov.**以及齐亚尼修丽金龟 *I. zianii* Zhao & Sabatinelli, **sp. nov.**。另外，将 *Adoretosoma parvula* Benderitter, 1929，*Anomala dohertyi* Arrow, 1917 和 *Anomala parva* Arrow, 1917 移动到 *Ischnopopillia* 属，并对 *Adoretosoma parvula*，*Anomala dohertyi*，*A. parva* 以及 *A. pusilla* Arrow, 1912 进行了选模指定。最终，该种组包含 14 个物种。

关键词：异丽金龟族，不丹，中国，喜马拉雅，印度，新种，新组合

Citation: Zhao M-Z & Sabatinelli G 2025: A revision of the *Ischnopopillia pusilla* species group (Coleoptera: Scarabaeidae: Rutelinae. *The Indochina Entomologist*, 1 (98): 995–1030. [赵明智 & Sabatinelli G 2025: 角斑修丽金龟种组 *Ischnopopillia pusilla* species group 分类修订(鞘翅目：金龟科：丽金龟亚科）新种、新记录种. 中南半岛昆虫学家, 1 (98): 995–1030.]
https://doi.org/10.70590/ice.2025.01.98

Accepted by Hao XU: 15.XII.2025; published online: 18.XII.2025

Copyright Ming-Zhi ZHAO & Guido SABATINELLI. This is an open access article distributed under the terms of the Creative Commons Attribution License (CCBY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Introduction

Among the anomaline leaf chafers, *Ischnopopillia* Kraatz, 1892 is a small genus of the subtribe Popilliina Ohaus, 1932 with approximately 30 known species. Arrow (1913) considered the species assigned to *Ischnopopillia* by Kraatz (1892) to this genus to be heterogeneous. Later, Arrow (1917) synonymized *Ischnopopillia* with the genus *Anomala* Samouelle, 1819 and placed the species in a separate "section" comprising species with a mesosternal process. Machatschke (1957) diagnosed the genus by the slender body, the evenly rounded posterior margin of the pronotum and the presence of a short mesometasternal process. A major taxonomic contribution was provided by Machatschke (1975), who defined the *I. lateralis* group and the *I. erythoptera* group and revised the accommodated species. Subsequently, Lin (1965, 1979, 1981, 1988, 1992) and Sabatinelli (1997) described a considerable number of new species from the Himalaya and Yunnan. Zorn (2005) revised the synonymies of three known species.

This study is the latest contribution to the knowledge of the genus *Ischnopopillia* after 20 years of absence of research. The *I. pusilla* species group is here defined. The review of eight already known species and six new species is presented.

Material and methods

The labels of all examined specimens are cited by verbatim. Some smaller-scale place names were annotated in Chinese for the convenience of the reader. Type specimens of the new species are cited verbatim and each provided with one label "HOLOTYPE [or] PARATYPE [*taxon name*] des. Zhao, 2025". Type specimens of species with newly designated lectotype are likewise labeled "LECTOTYPE [or] PARALECTOTYPE [*taxon name*] des. Zhao, 2025". Citation of individual labels were separated by a double slashes (//).

The specimens were observed and dissected under a Motic SMZ-171 stereomicroscope. Images for general habitus and detailed characters were taken using a Canon EOS 760D camera in conjunction with a Laowa 60 mm f/2.8 2X Ultra-Macro Lens and a Laowa 25 mm f/2.8 2.5-5X Ultra Macro Lens, respectively. Zerene Stacker (version 1.04) was used for stacking. The distribution maps were produced by QGIS 3.40.5 (GPS data of each species see Supplement Table, DOI: 10.5281/zenodo.17951440). All images were edited and arranged into plates in Adobe Photoshop CS5. Specimens quoted in the present paper are deposited in the following public or personal collections:

IRSNB Institut royal des Sciences naturelles de Belgique, Brussels, Belgique;
IZCAS Institute of Zoology, Chinese Academy of Science, Beijing, China;
IZGAS Institute of Zoology, Guangdong Academy of Science, Guangzhou, China;
MNHN Muséum national d'histoire naturelle, Paris, France;
NHMB Naturhistorisches Museum Basel, Switzerland;
NMPC National Museum, Praha, Czech Republic;
NHMUK Natural History Museum, London, United Kingdom;
NHMW Naturhistorisches Museum Wien, Vienna, Austria;
NMBF G. Frey's collection, Naturhistorisches Museum, Basel, Switzerland;
SCAU South China Agricultural University, Guangzhou, China;
SDEI Senckenberg German Entomological Institute, Müncheberg, Germany;
SYSU Museum of Biology, Sun Yat-sen University, Guangzhou, China;
ZFMK Zoologische Forschungsmuseum A. Koenig, Bonn, Germany;
CCPC Chang-Chin Chen personal collection, Tianjin, China;
CZPC Carsten Zorn personal collection, Gnoien, Germany;
GSPC Guido Sabatinelli personal collection, Prévessin, France;

ZMPC Ming-Zhi Zhao personal collection, Zhuhai, China.

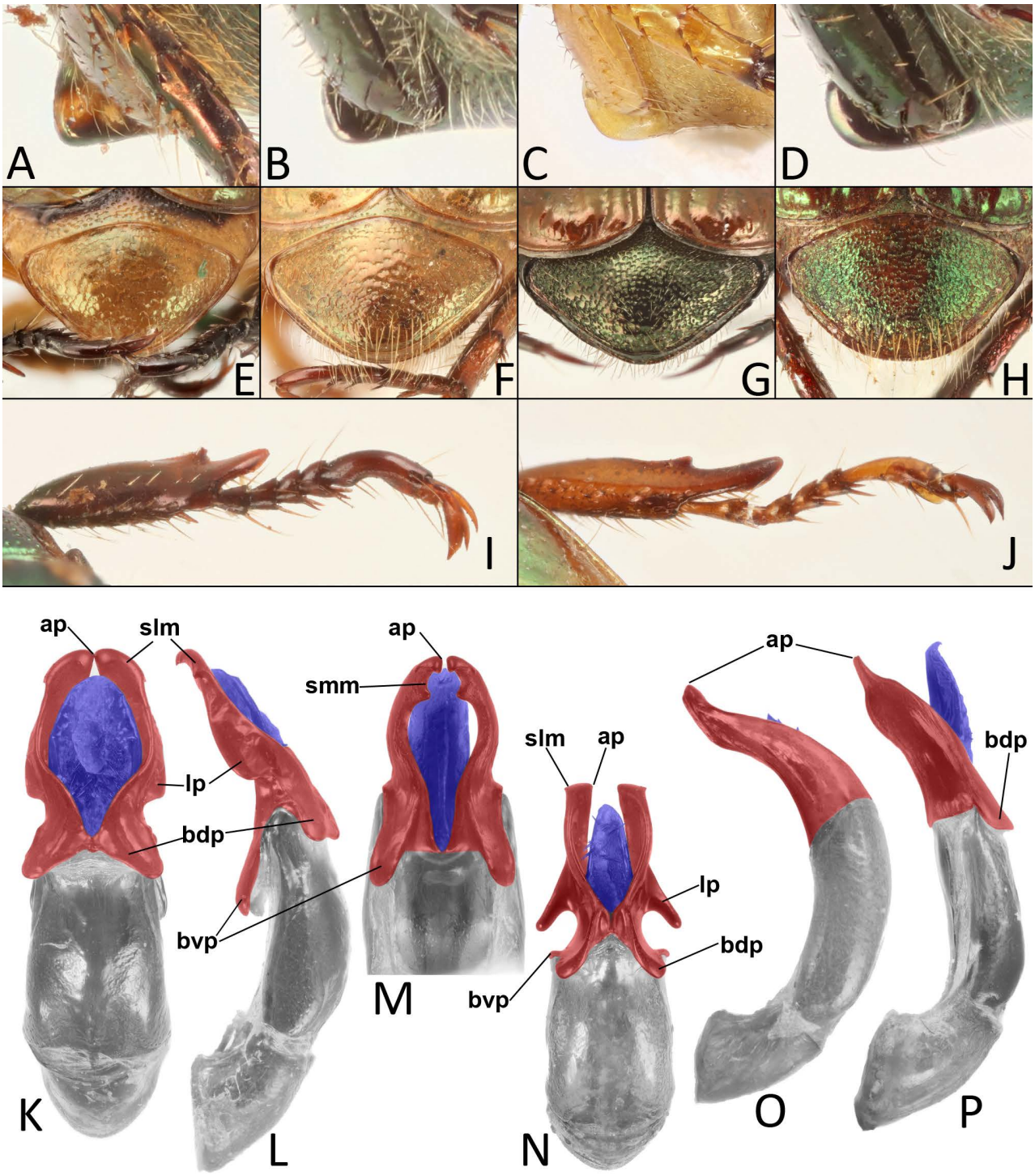

FIGURE 1. Detailed characters of the *Ischnopopillia pusilla* species group: **A–D** mesometasternal process; **E–H** pygidium; **I–J** protibia and protarsus; **K–P** male genitalia. **A** *I. dohertyi* (Arrow, 1917), lectotype; **B** *I. zianii* Zhao & Sabatinelli, **sp. nov.**, holotype; **C** *I. parvula* (Benderitter, 1929), female, Yen Bai; **D, G** *I. laticollis* Zhao, **sp. nov.**, holotype; **E** *I. pusilla* (Arrow, 1912), lectotype; **F** *I. pusilla*, paralectotype female, Shamdang; **H** *I. dohertyi*, paralectotype female, Manipur; **I** *I. parva* (Arrow, 1917), paralectotype male, Cherrapunji; **J** *I. laticollis*, paratype female, Likhu Khola Tal; **K–L** *I. pusilla*, Gyirong; **M** *I. atrivaria* Lin, 1981, Lulang; **N** *I. bisignata* Zhao, **sp. nov.**, holotype; **O** *I. zhengi* Zhao, **sp. nov.**, holotype; **P** *I. nana* Lin, 1992, Biyuhecun. Abbreviations for parameres: *ap* = apex, *bdp* = basal dorsal protrusion, *bvp* = basal ventral protrusion, *lp* = lateral piece, *slm* = subapical lateral margin, *smm* = subapical medial margin. Parameres marked red, endophallus marked blue. All not to scale.

Taxonomy

Genus *Ischnopopillia* Kraatz, 1892: 292 修丽金龟属

Type species: *Popillia rugicollis* Newman, 1838 = *Ischnopopillia lateralis* (Hope, 1831), designated by Arrow, 1913: 39.

Definition of the *Ischnopopillia pusilla* species group

Diagnosis. Small, ca. 5–9 mm, elongated ovoid, weakly convex. Usually yellow or dark green, with variable markings, especially on pronotum, pygidium and ventral surface. Clypeus subtrapezoidal with usually weakly reflexed anterior margin. Dorsal surface almost bare, only with marginal setae. Base of pronotum equally as wide as base of elytra. Elytral intervals almost flat or weakly convex distally, more or less impressed between scutellum and humeral protuberance; secondary striae never doubled; epipleuron bearing some tiny setae at base. Mesometasternal process short, usually rounded or truncate apically (Fig. 1A–D). Pygidium and ventral surface generally sparsely setose, females with denser setae distally (Fig. 1E–H). Tibiae and tarsi not distinctly widened in male (Fig. 1I); protarsomere 5 of male with a blunt basomedial protuberance (Fig. 1I), small and triangular in female, occasionally almost absent (Fig. 1J). Parameres symmetrical, usually with a ridged or toothed subapical margin (*slm* and *smm* in Fig. 1K–N), and basal protrusions (*bdp* and *bvp* in Fig. 1K–N, 1P), a variable piece frequently present (*lp* in Fig. 1K–L, 1N); ventral plate well-developed, usually fused with base of parameres; endophallus sclerotized ventrally, dorsally membranous with numerous spiniform endophallites (blue part in Fig. 1K–P).

Distribution. Yunnan and Xizang in China; Bhutan; Northeast India; Nepal; North Vietnam (Figs 13–14).

Ischnopopillia pusilla (Arrow, 1912) 角斑修丽金龟

Figs 1E–F, 1K–L, 2A–H, 9A–F, 13

Anomala pusilla Arrow, 1912: 82 [original description, type locality: “Sikkim: Mungphu; Kurseong; Shamdang”, “Assam: Manipur; Shillong”, “Nepal: Soondrigal”]; Arrow 1917: 263, fig. 56; Machatschke 1957: 95 [*Callistethus*]; Lin 1988: 253 [*Ischnopopillia*].

Type material (8♂♂, 3♀♀)**. Lectotype (hereby designated).** ♂ (NHMUK) “IND. MUS. 3138 16 // 1911·328 // Shamdang about 3000 ft Sikkim 7-IX-09. // NHMUK015015853”; **Paralectotypes.** 1♂ (NHMUK) “Type // Sikkim. R.P. Verschraeghen. 1911–218 // Darjeeling 1904 R. P. Verschraeghen // *Anomala pusilla*, *Type* Arrow // NHMUK016502932”; 1♂ (NHMUK) “Darjeeling Verschraeghen // R.P. Verschraeghen. 1911–218. // NHMUK015015856”; 1♂, 1♀ (MNHN) “Darjeeling R. P. Verschraeghen // Anomala pusilla Arr Déterminé par Arrow 1912 // Type // MUSÉUM PARIS 1952 COLL. R. OBERTHÜR”; 1♀ (NHMUK) “IND. MUS. 3138 16 // 1911·328 // Shamdang about 3000 ft Sikkim 7-IX-09. // *Anomala pusilla* ♀ *co-type* Arrow // NHMUK015015855”; 1♀ (NHMUK) “♀ // Mungphu. // Atkinson. Coll. 92–3. // NHMUK015015858”; 1♂ (NHMUK) “♂ // Mungphu. // Atkinson. Coll. 92–3. // NHMUK015015859”; 1♂ (NHMUK) “♂ // Mungphu. // Atkinson. Coll. 92–3. // 79 // NHMUK015015860”; 1♂ (NHMUK) “1984 16 // 1911 328 // Soondrijal Nepal // Figured for "Fauna of India." // NHMUK015015861”; 1♂ (NHMUK) “1989 16 // 1911 328 // Soondrijal Nepal // NHMUK015015862”.

Additional material (50♂♂, 22♀♀)**. India:** 1♂, 2♀♀ (MNHN) “Sikkim Chasseurs Indigènes R P. Bretaudeau 1894”; 1♂ (MNHN) “Sikkim Kurseong R P. Bretaudeau 1894”; 1♀ (MNHN) “Sikkim Rhenok Eté 1894 Chasseurs Bretaudeau”; 2♂♂ (MNHN) “Environs de Kurseong R P. Bretaudeau”; 3♂♂ (MNHN) “Darjeeling R. P. Verschraeghen”; 1♂ (MNHN) “DARJEELING. DESGODINS.”; 1♂ (MNHN) “MUSEUM. PARIS SIKKIM DARJEELING HARMAND 1890 // Ohaus determ. Spilota pusilla Arr.”; 1♂ (MNHN) “Darjeeling // MUSEUM PARIS 1906 Coll. Léon FAIRMAIRE”; 1♂ (MNHN) “BRITISH INDIA SIKKIM Lachen-Lachung VIII.1933”; 2♂♂ (SDEI) “Darjeeling Juni Fruhstorfer leg.”; 1♂ (SDEI) “DARJ.”; 1♂ (NHMUK) “8286 18 // 1911·328 // Kurseong 6000 ft. E. Himalayas 22-VIII-09 D' Abreu // NHMUK015015854”; 1♂ (NHMUK) “IND. MUS. 3135 16 // 1911·328 // Gantok 6150 ft Sikkim 9-IX-09. Museum Collector // NHMUK015015866”; 1♀ (NHMUK) “Darjiling // Andrewes Bequest. B.M. 1922-221 // Anomala pusilla Arr.

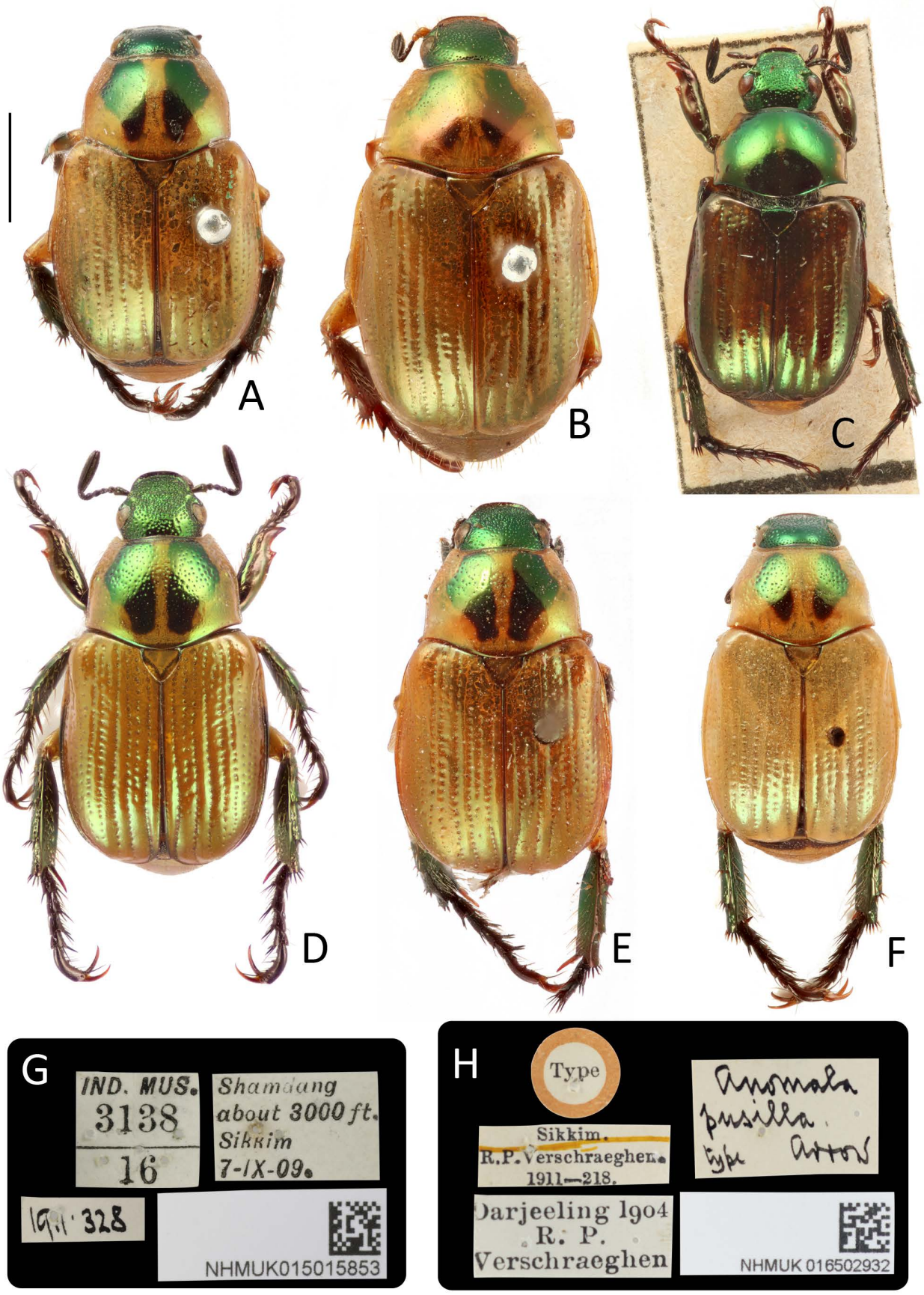

FIGURE 2. *Ischnopopillia pusilla* (Arrow, 1912), habitus (**A–F**) and labels (**G–H**): **A, G** lectotype, Shamdang; **B** paralectotype female, Shamdang; **C** male, Lachen-Lachung; **D** male, Gyirong; **E** paralectotype male, Soondrijal; **F** male, Khasi; **H** paralectotype male, Darjeeling. Scale bar = 2 mm.

G.J.Arrow det. // NHMUK015015869"; 1♂ (NHMB) "Bokkim Chugha 2600m 2520m // Sikkim Bhakta B. 22.VIII.80 // Anomala pusilla Arr. det. Sabatinelli 1982"; 1♀ (NHMB) "Lagyap 2500m 28.X.-3.XI.84 // Indien E. Sikkim Ch. J. Rai"; 1♂ (NMBF) "Sikkim India // Ohaus determin. *anomala pusilla* arr."; 3♂♂, 2♀♀ (NMBF) "Sikkim India // Anomala pusilla Arr. det. G. Frey, 1967"; 1♂ (NMPC) "Khasis // coll. Kouřil P5/46/62 // Adoretosoma signaticolle Nonfr. Det. Tesař"; **NEPAL:** 1♂, 3♀♀ (NHMW) "Kakani b. Kathmandu Nepal, 26.9.78 lg. H. Franz"; 1♀ (ZMPC) "Kakani b. Kathmandu Nepal, 26.9.78 lg. H. Franz"; 8♂♂ (NHMW) "NUM–29.VII.72 1600–2000 m // NEPAL J. GREGORJ"; 1♂ (ZMPC) "NUM–29.VII.72 1600–2000 m // NEPAL J. GREGORJ"; 1♂, 2♀♀ (CZPC) "Nepal Helambu, above Chipling 85°28'E 27°53'N 22-2400 m 28.–30.8.97 lg. Fabrizi & Ahrens"; 1♀ (ZFMK) "NEPAL, Helambu, Mulkharka-Chisapani 85°27′E 27°50′N 1800-2500-2200 m 26.8.97 leg. Fabrizi & Ahrens // ZFMK ExColl Dirk Ahrens"; 1♀ (CZPC) "Himalaya Mt. Everest"; 1♂ (GSPC) "Himalaya Mt. Everest"; 2♂♂, 3♀♀ (NHMB) "Kimathanka O. Nepal 8.80"; 1♀ (NHMB) "Kimathanka O. Nepal VIII.80"; 1♂, 1♀ (GSPC) "Kimathanka O. Nepal VIII.80"; 1♂ (ZMPC) "Kimathanka O. Nepal VIII.80"; **CHINA:** 2♂♂ (ZMPC) "CHINA: Tibet, Shigatse, Gyirong Port [吉隆口岸] N 28°17′02.29″, E 85°23′28.74″ 1847 m, 2023.VIII.1, daytime Quan-Yu Ji leg."; 1♂ (ZMPC) "China: Xizang, Dinggyê County, Zhêntang, Ganma Zangbo [甘玛藏布], 27°51′46″N, 87°24′21″E, 2330 m 31.vii.2025, Yin et al. leg."; 1♀ (ZMPC) "China: Xizang, Cuona Co., Le Township, Le Village [勒村] 2450 m 2009.X.5"; **Imprecise locality:** 1♀ (ZFMK) "Himalaya 86. 5 // spec. // Dauerleihgabe Fuhlrott-Museum ZFMK Bonn 05/09"; 2♂♂ (ZFMK) "Nord Indien. 86. Juli // Dauerleihgabe Fuhlrott-Museum ZFMK Bonn 05/09"; 5♂♂ (ZFMK) "Nord Indien 86. Seitp. // Dauerleihgabe Fuhlrott-Museum ZFMK Bonn 05/09"; 1♂ (NHMUK) "Himalaya // Bowring. 63·47* // ♂ // Spilota (Anomala) n. sp. // NHMUK015015863"; **Incorrect locality:** 1♂ (NHMUK) "Allahabad // Bowring. 63·47* // NHMUK015015867"; 1♂ (NMBF) "Madras India // Anomala pusilla Arr. det. G. Frey, 1967".

Redescription. Lectotype (male). Body shape elongated ovoid, weakly convex in lateral view.

***Color*.** General color yellow, with bronze luster; head, two elongated and separated patches reaching anterior margin of pronotum and a triangular marking on metasternum dark green; all tibiae (except for a paler marking on dorsal face of protibia) and tarsi brown; tibiae, posterior margin of pronotum and lateral margins of scutellum with greenish luster; antenna black; fine setae pale, robust setae on legs reddish brown.

***Head*.** Clypeus ca. 2.7 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and moderately reflected, clypeal surface with very dense and large punctures; frontal clypeal suture straight, slightly impressed at each side. An inverted triangular portion on anterior half of frons and portions posterior to each eye with dense and large punctures, elsewhere with sparser and smaller punctures. Antennal club shorter than greatest width of clypeus, slightly shorter than combined length of antennomeres 1–6. Interocular distance/maximum head width = 0.69. Inner margin of eye with several moderately long setae.

***Pronotum*.** Sides rather weakly convergent anteriad in basal third, strongly convergent anteriad in apical half; lateral margin straight in basal third and apical third, moderately arched in middle; anterior margin concave, posterior margin strongly convex; anterior angle right-angled and protruding, posterior angle obtuse and not protruding; posterior marginal line absent, other marginal lines complete. Disc with sparse and minute punctures, lateral quarter with dense and large punctures, confluent at lateral margins but gradually smaller and sparser medially; lateral margin with several long setae.

Scutellum triangular, smooth.

Elytra approximately 1.1 times longer than width; anterior margins strongly concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent and their tips smooth. Intervals almost flat, subsutural interstice widest; strial punctures moderately dense and large; subsutural interstice with a secondary stria ending at apical third, interstice 2 with a few sparse punctures at basal sixth, interstice 3 with a discontinuous secondary stria in basal third. Lateral carina evenly and slightly widened, reflexed; epipleuron with a few minute setae at base.

***Ventral thoracic surface*.** Mesometasternal process compressed laterally, apically rounded, surpassing mesocoxae and reaching basal third of mesosternum. Surface of hypomeron with sparse and moderately long setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense, rugose, large and annular punctures, more or less confluent into striation, lateral portion with very dense and long setae, broad medial portions nearly smooth and surrounded by several longer setae.

***Abdomen*.** Pygidium wider than long, moderately convex in lateral view; propygidium with dense and coarse punctures, pygidium with very dense, large and annular punctures, strongly confluent; pygidium with sparse and long setae in distal half. Each abdominal ventrite with a row of dense and transverse punctures and some irregularly arranged punctures in basal half, denser laterally, ventrites 1–5 each with a row of moderately dense and long setae at middle, ventrite 6 with dense and long setae on distal edge.

Legs. Protibia bidentate, apical tooth acute and extending to middle of protarsomere 3, subapical tooth small; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fifth. Protarsomere 5 strongly concave medially, with a blunt protuberance in basal third, meso- and metatarsomeres 5 each bearing a subtriangular protuberance medially. Inner protarsal and outer mesotarsal claw split apically, with both lower branches wider and longer than their upper branches; lower margin of inner protarsal claw not convex, distinctly notched basally.

Male genitalia. Apex of parameres bent ventrally and rounded in dorsal view, subapical lateral margin with a wide lateral tooth, subapical medial margin straight, lateral piece narrowly extended. Parameres with basal dorsal and ventral protrusions, seam between base of parameres and ventral plate absent. Sclerotized endophallus with a rounded apex.

Variation of males. Large punctures on pronotum sometimes extending to central portions. Secondary stria on subsutural interstice ending at apical third to apical fourth. Elongated patches on pronotum sometimes not reaching anterior margin, lateral carina of elytra sometimes partly dark green. Darker form has metallic dark green pronotum, with yellow lateral portions and a vague longitudinal stripe not reaching margins, scutellum entirely metallic dark green; elytra yellowish brown, with strong greenish luster, deeper on distal third; the whole propygidium, an elongated patch on each side of pygidium, prosternum, ventral meso- and metasternal surface (excluding mesepisternum) dark green.

Female. Body more compact than male. Dark patches on pronotum smaller, always not reaching anterior margin; clypeus, metasternum and propygidium yellow; pro- and mesotibiae yellowish brown, metatibiae and all tarsi reddish brown; antennomeres 1–2 yellow. Antennal club as long as combined length of antennomeres 2–6; eyes smaller, interocular distance/maximum head width = 0.76. Lateral carina of elytra abruptly widened from basal fifth to apical half and bulging. Pygidium flatter and wider, with denser setae. Protibia thinner and shorter, apical tooth elongated, subapical tooth rounded, protarsomeres thinner and shorter, protarsomere 5 bearing a small subtriangular protuberance medially; both apical branches of inner protarsal claw smaller and almost equal.

Measurements. Body length: 6.3–7.1 mm in males (lectotype 6.7 mm) and 7.2–8.3 mm in females, greatest width: 3.4–4.0 mm in males (lectotype 3.9 mm) and 3.9–4.8 mm in females.

Diagnosis. *Ischnopopillia pusilla* is an externally variable species and can be identified by the strongly downward pointing apex and the narrowly extended lateral piece of the parameres.

Distribution. China: Xizang; India: Sikkim, West Bengal, Meghalaya (new record); Nepal: Bagmati, Koshi (new record).

Remarks. One syntype from Manipur is a female of *Ischnopopillia parva* (Arrow, 1917) (see below). Therefore, a lectotype designation for *I. pusilla* is necessary. All specimens collected by R. P. Verschraeghen were labelled as originating from Darjeeling instead of Kurseong as mentioned in the original description. They are still regarded as syntypes, since at least three of them bear the type label of Arrow. It remains uncertain whether Arrow actually made a mistake when transcribing the label data. To avoid any uncertainty, the syntype from Shamdang is here designated as the lectotype.

Lin (1988) correctly transferred this species from *Anomala* to *Ischnopopillia*. However, he reported this species from Linzhi Region, which is far away from where it was frequently collected (mostly around Central Nepal and Sikkim). Another record from Khasi Hills (1♂ in NMPC) is also quite isolate. The single female from Cuona (in ZMPC) is tentatively identified as *I. pusilla*. However, examination of male specimens is necessary to confirm the identity.

Ischnopopillia dohertyi (Arrow, 1917) comb. nov. 多氏修丽金龟

Figs 1A, 1H, 3E–F, 3H, 10D–F, 13

Anomala dohertyi Arrow, 1917: 264 [original description, type locality: "Assam: Manipur"]

Type material (1♂, 1♀)**. Lectotype (hereby designated).** ♂ (NHMUK) "Type H.T. // 63178 // Doherty // India Or [orientalis] Manipur // Fry Coll. 1905-100. // *Anomala dohertyi, type* arrow // NHMUK 010844273". **Paralectotype.** 1♀ (NHMUK) "63177 // Doherty // India Or Manipur // Fry Coll. 1905-100. // *Anomala dohertyi*, // NHMUK 010844275".

Redescription. Lectotype (male). Body shape elongated ovoid, weakly convex in lateral view.

***Color*.** General color yellow, with bronze luster; head, two broad patches reaching both anterior and posterior margins of pronotum (weakly oblique basomedially, surrounding a small, triangular yellow marking), lateral margins of scutellum, ventral thoracic surface (except for hypomeron), and all abdominal ventrites (except for lateral portions) dark green; all tibiae and legs coppery; antennae blackish brown; fine setae pale, robust setae on legs reddish brown.

***Head*.** Clypeus ca. 2.3 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and moderately reflexed, clypeal surface very densely and coarsely punctate; frontal clypeal suture straight, slightly impressed at each side. An inverted triangular portion on anterior half of frons and portions posterior to each eye with dense and coarse punctures, elsewhere with sparser but large punctures. Antennal club slightly shorter than greatest width of clypeus, as long as combined length of antennomeres 1–6. Interocular distance/maximum head width = 0.68. Inner margin of eye with several moderately long setae.

***Pronotum*.** Sides weakly convergent anteriad in basal third, strongly convergent anteriad in apical half; lateral margin weakly concave in basal third, moderately arched in middle and straight in apical third; anterior margin concave, posterior margin strongly convex; anterior angle acute and protruding, posterior angle nearly right-angled and weakly protruding; posterior marginal line absent, other marginal lines complete. Disc with sparse and minute punctures, lateral quarter with dense and large punctures, confluent at lateral margin but gradually smaller and sparser medially; lateral margin with several long setae.

Scutellum triangular, smooth.

Elytra approximately 1.1 times longer than width; anterior margins strongly concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent and smooth. Intervals weakly elevated, subsutural interstice widest; strial punctures moderately dense and large; subsutural interstice with a secondary stria ending at apical fourth, interstice 2 with a secondary stria ending at basal two fifths, interstice 3 with a discontinuous secondary stria in basal two fifths. Lateral carina evenly and slightly widened, reflexed; epipleuron with a few minute setae at base.

***Ventral thoracic surface*.** Mesometasternal process compressed laterally, triangularly produced, slightly surpassing mesocoxae, anterior margin truncate. Surface of hypomeron surface with sparse and moderately long setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense, rugose, large and annular punctures, more or less confluent into striations, lateral portion with very dense and long setae, broad medial portions nearly smooth and surrounded by several longer setae.

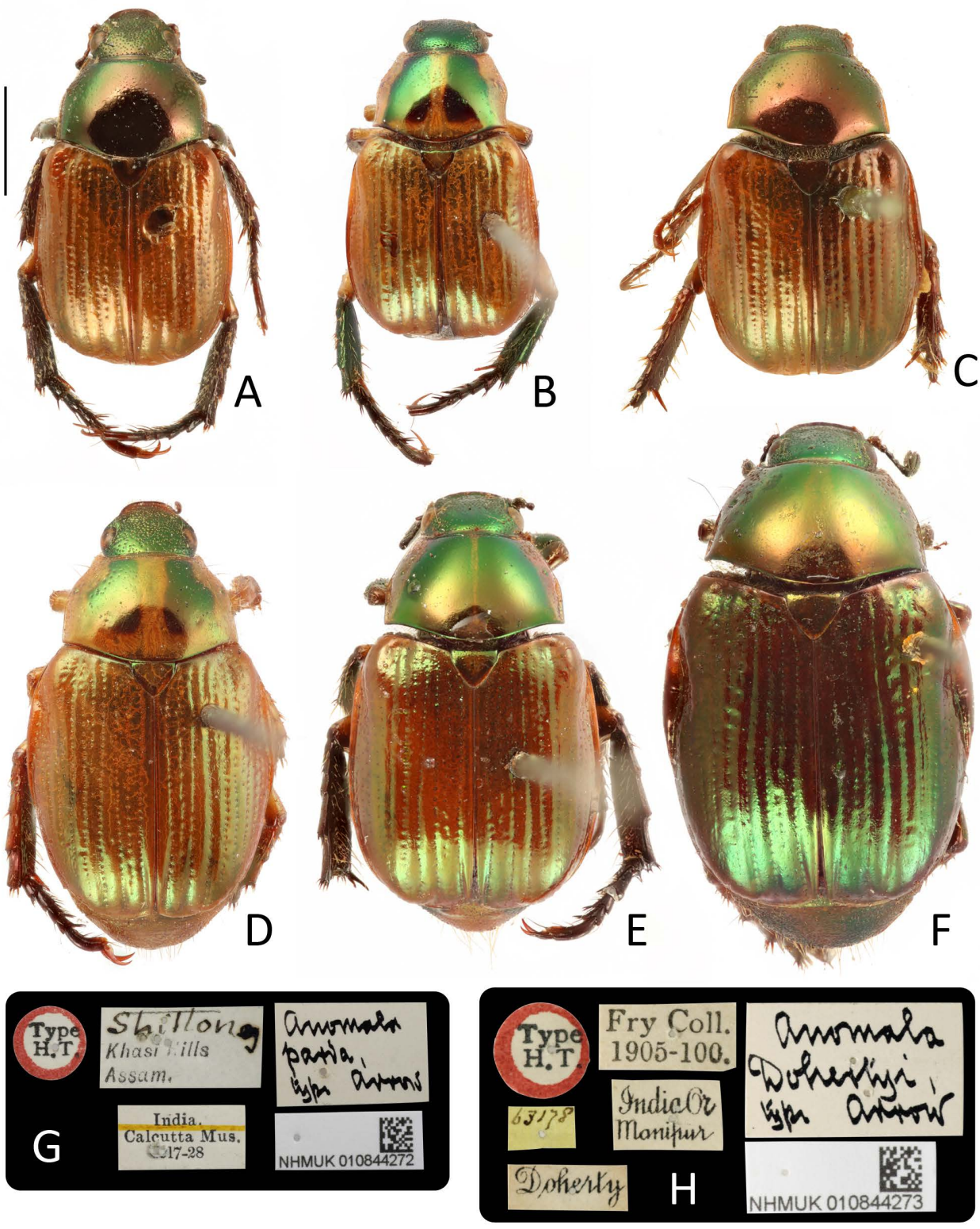

FIGURE 3. *Ischnopopillia* spp., habitus (**A–F**) and labels (**G–H**): **A, G** *I. parva* (Arrow, 1917), lectotype, Shillong; **B** *I. parva*, male, Manipur; **C** *I. parva*, paralectotype female, Cherrapunji; **D** *I. parva*, female, Manipur, paralectotype of *I. pusilla* (Arrow, 1912); **E, H** *I. dohertyi* (Arrow, 1917), lectotype, Manipur; **F** *I. dohertyi*, paralectotype female, Manipur. Scale bar = 2 mm.

***Abdomen*.** Pygidium wider than long, moderately convex in lateral view; propygidium and pygidium with dense and coarse punctures, strongly confluent and rugose on pygidium; pygidium with sparse and long setae in

distal half. Each abdominal ventrite with a row of dense and transverse punctures, denser laterally, ventrites 1–5 each with a row of moderately dense and long setae at middle, ventrite 6 with dense and long setae on distal edge.

Legs. Protibia bidentate, apical tooth acute and extending to middle of protarsomere 3, subapical tooth small; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fifth. Protarsomere 5 strongly concave medially, with a blunt protuberance in basal third, meso- and metatarsomeres 5 each bearing a subtriangular protuberance medially. Inner protarsal and outer mesotarsal claw split apically, with both lower branches wider and longer than their upper branches; lower margin of inner protarsal claw not convex, distinctly notched basally.

Male genitalia. Apex of parameres bent ventrally and truncate in dorsal view, subapical lateral margin widely extended, subapical medial margin produced ventrally and blunt, lateral piece widely extended and lobe shaped. Parameres with basal dorsal and ventral protrusions, seam between base of parameres and ventral plate absent. Sclerotized endophallus with an acute apex.

Female. Body more compact than male. Dark patches on pronotum paler, narrower, broadly separated medially; head (except for clypeus), pronotal patches, and broad lateral portions of pygidium dark green; broad medial portions of metasternum and abdomen, all tibiae and tarsi coppery. Antennal club as long as combined length of antennomeres 2–6; eyes smaller, interocular distance/maximum head width = 0.70. Lateral carina of elytra abruptly widened from basal fifth to apical two fifths and bulging. Pygidium flatter and wider. Protibia thinner and shorter, apical tooth elongated, subapical tooth rounded, protarsomeres thinner and shorter, protarsomere 5 bearing a small subtriangular protuberance medially; both apical branches of inner protarsal claw smaller and almost equal.

Measurements. Body length: 7.9 mm in male and 9.2 mm in female, greatest width: 4.6 mm in male and 5.6 mm in female.

Differential diagnosis. *Ischnopopillia dohertyi* can be separated from *I. bidentata* Lin, 1979 and *I. sabatinellii* Zhao, **sp. nov.** by the lateral piece of the parameres, which is similar in width but more distinctly prolonged basally.

Distribution. India: Manipur.

Remarks. This species is transferred to the genus *Ischnopopillia* due to its morphological similarity with *I. pusilla* (Arrow, 1912) and other related species.

Ischnopopillia chenchangchini Zhao, sp. nov. 陈氏修丽金龟

https://zoobank.org/F05968A1-7F13-4A30-9823-E8B73166C4B2

Figs 4A–D, 10A–C, 14

Type material (23♂♂, 4♀♀). **Holotype.** ♂ (SCAU) “CHINA, Yunnan, Tengchong, Houqiao [猴桥] 1900m, 2018, IX.05~13, Leg. C.-C. Chen CCCC”. **Paratypes.** 8♂♂, 2♀♀ (CCPC) “CHINA, Yunnan, Tengchong, Houqiao 1900m, 2018, IX.05~13, Leg. C.-C. Chen CCCC”; 5♂♂, 2♀♀ (ZMPC) “CHINA, Yunnan, Tengchong, Houqiao 1900m, 2018, IX.05~13, Leg. C.-C. Chen CCCC”; 5♂♂ (ZMPC) “Yunnan, Tengchong, Stilwell Highway [史迪威公路] 2200 m 2020.8.23 Guo-Cong Huang, Yi-Bo Fan”; 1♂ (CCPC), “Yunnan, Te-hung-chou, Lung-chuan, Mang-tung [芒东], 1770m, 2015, IX-17, Y.-T. Chung Leg. CCCC”; 2♂♂ (CCPC, ZMPC) “Yunnan, Yingjiang, Xima, 2nd hydropower station, 1479m 2014-IX-8 net sweeping, Xiao-Dong Yang Leg. 14Y0179-80 CCCC”; 1♂ (ZMPC), “Yunnan, Gongshan, Dulongjiang, Kongdang [孔当] 2010.VII.27”.

Description. Holotype (male). Body shape elongated ovoid, weakly convex in lateral view.

Color. General color yellow, with bronze luster; head, two broad patches reaching both anterior and posterior margins of pronotum (weakly oblique basomedially, surrounding a small triangular yellow marking), lateral margins of scutellum and all tibiae (except for a paler marking at base of dorsal face) coppery red; all tarsi, a large triangular marking on metasternum, distal margin of all abdominal ventrites dark green; distal half of prosternum and antennomeres 6–9 black, antennomeres 1–5 blackish brown; fine setae pale, robust setae on legs reddish brown.

FIGURE 4. *Ischnopopillia* spp., habitus: **A** *I. chenchangchini* Zhao, **sp. nov.**, holotype, Houqiao; **B** *I. chenchangchini*, paratype male, Houqiao; **C** *I. chenchangchini*, paratype female, Houqiao; **D** *I. chenchangchini*, paratype male, Kongdang; **E** *I. laticollis* Zhao, **sp. nov.**, holotype, Likhu Khola Tal; **F** *I. laticollis*, paratype female, Likhu Khola Tal. Scale bar = 2 mm.

Head. Clypeus ca. 2.5 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and moderately reflexed, clypeal surface densely, coarsely rugopunctate; frontal clypeal suture straight, slightly impressed at each side. An inverted triangular portion on anterior half of frons and portions posterior to each eye with dense and coarse punctures, elsewhere with sparser but large punctures. Antennal club shorter than greatest width of clypeus, slightly shorter than combined length of antennomeres 1–6. Interocular distance/maximum head width = 0.64. Inner margin of eye with several moderately

long setae.

***Pronotum*.** Sides weakly convergent anteriad in basal third, strongly convergent anteriad in apical half; lateral margin weakly concave in basal third and apical third, moderately arched in middle; anterior margin concave, posterior margin strongly convex; anterior angle acute and protruding, posterior angle nearly right-angled and weakly protruding; posterior marginal line absent, other marginal lines complete. Disc with sparse and minute punctures, lateral quarter with dense and large punctures, confluent at lateral margin but gradually smaller and sparser medially; lateral margin with several long setae.

Scutellum triangular, smooth.

Elytra approximately 1.1 times longer than width; anterior margins strongly concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent and smooth. Intervals weakly elevated, subsutural interstice widest; strial punctures moderately dense and large; subsutural interstice with a secondary stria ending at apical fourth, interstice 2 with a secondary stria ending at basal fourth, interstice 3 with a discontinuous secondary stria in basal two fifths. Lateral carina evenly and slightly widened, reflexed; epipleuron with a few minute setae at base.

***Ventral thoracic surface*.** Mesometasternal process compressed laterally, apically rounded, surpassing mesocoxae and reaching basal third of mesosternum. Surface of hypomeron surface with sparse and moderately long setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense, rugose, large and annular punctures, more or less confluent into striations, lateral portion with very dense and long setae, broad medial portions nearly smooth and surrounded by several longer setae.

***Abdomen*.** Pygidium wider than long, moderately convex in lateral view; propygidium and pygidium with dense and coarse punctures, more or less confluent on pygidium; pygidium with sparse and long setae in distal half. Each abdominal ventrite with a row of dense and transverse punctures, denser laterally, ventrites 1–5 each with a row of moderately dense and long setae at middle, ventrite 6 with dense and long setae on distal edge.

Legs. Protibia bidentate, apical tooth acute and extending to middle of protarsomere 3, subapical tooth small; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fifth. Protarsomere 5 strongly concave medially, with a blunt protuberance in basal third, meso- and metatarsomeres 5 each bearing a subtriangular protuberance medially. Inner protarsal and outer mesotarsal claw split apically, with both lower branches wider and longer than their upper branches; lower margin of inner protarsal claw not convex, distinctly notched basally.

Male genitalia. Apex of parameres slightly bent ventrally and rounded in dorsal view, subapical lateral margin with a tiny tooth, subapical medial margin straight and partly membranous, lateral piece absent. Parameres with basal dorsal and ventral protrusions, seam between base of parameres and ventral plate present. Sclerotized endophallus with a rounded apex.

Variation of males. Elongated patches on pronotum usually fused medially, sometimes covering the small triangular yellow marking; pygidium completely yellow or basal margin with a dark patch at each side, sometimes extending apicad into a narrow and longitudinal stripe; dark markings on body surface vary from dark green to coppery; a specimen from Nujiang with broad, dark green marginal portions on elytra, each lateral portions of pygidium completely dark green. Lateral portions of pronotum occasionally lacking of large punctures.

Female. Body more compact than male. Dark patches on pronotum smaller, sometimes not reaching anterior and posterior margins, always separated medially; metasternum and abdomen completely yellow; head (except for clypeus), pronotal patches and metatibia coppery, pro- and mesotibiae yellowish brown, tarsi reddish brown. Antennal club as long as combined length of antennomeres 2–6; eyes smaller, interocular distance/maximum head width = 0.69. Lateral carina of elytra abruptly widened from basal fifth to apical two fifths and bulging. Pygidium flatter and wider. Protibia thinner and shorter, apical tooth elongated, subapical tooth rounded, protarsomeres thinner and shorter, protarsomere 5 bearing a small subtriangular protuberance medially; both apical branches of inner protarsal claw smaller and almost equal.

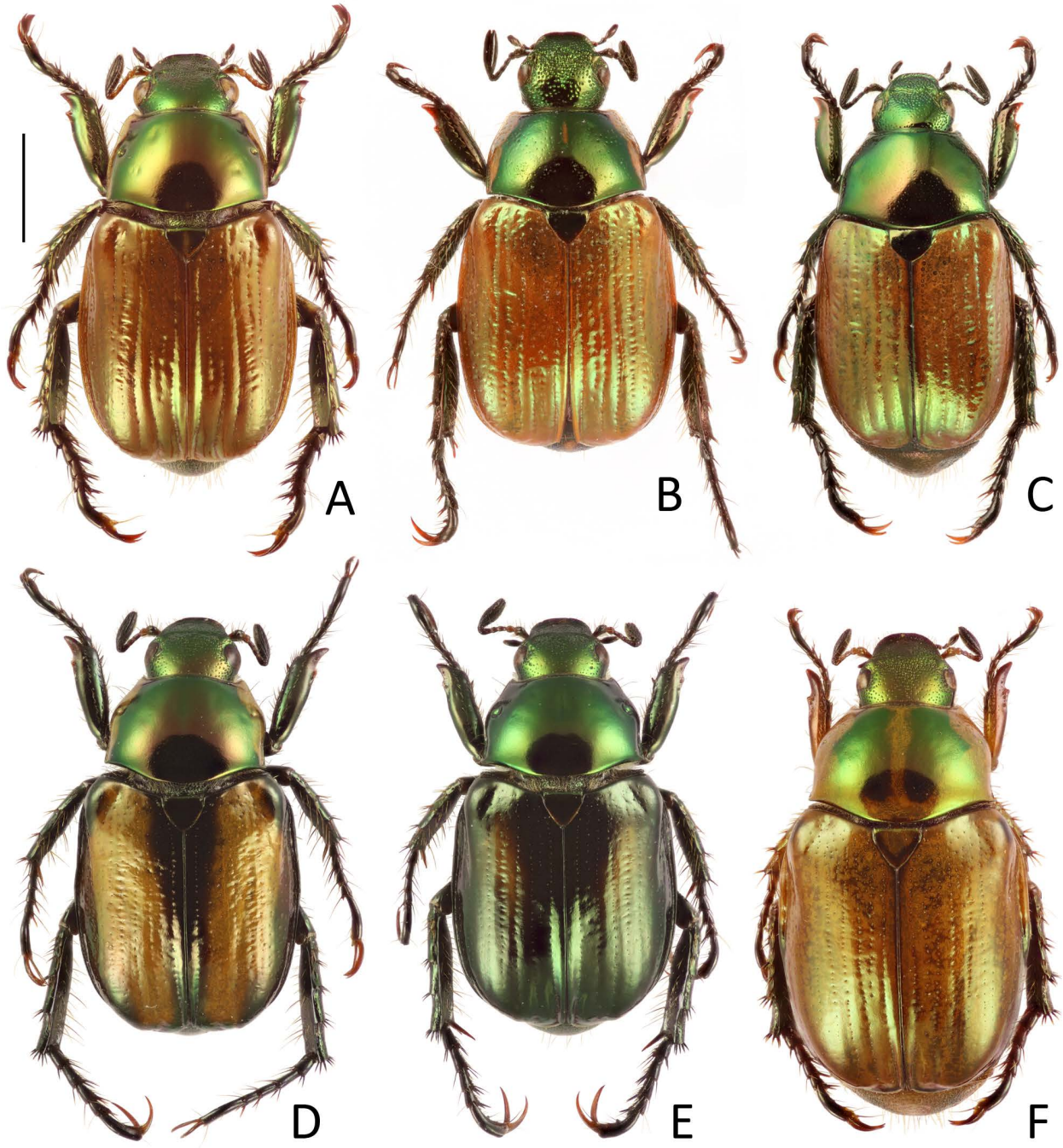

FIGURE 5. *Ischnopopillia* spp., habitus: **A** *I. laticollis* Zhao, **sp. nov.**, paratype male, Dinggye; **B** *I. flavomarginata* Lin, 1965, male, Senmuzha; **C** *I. zianii* Zhao & Sabatinelli, **sp. nov.**, holotype, Tabiting; **D** *I. atrivaria* Lin, 1981, male, Bayi; **E** *I. atrivaria*, male, Lulang; **F** *I. atrivaria*, female, Bayi. Scale bar = 2 mm.

Measurements. Body length: 6.8–7.4 mm in males (holotype 7.4 mm) and 7.8 mm in females, greatest width: 4.0 mm in males and 4.5 mm in females.

Differential diagnosis. *Ischnopopillia chenchangchini* **sp. nov.** is externally almost identical to *I. dohertyi* (Arrow, 1917). However, a large, lobe shaped lateral piece of the parameres is present in *I. dohertyi* but absent in *I. chenchangchini*. The basal dorsal and ventral protrusions of the parameres are shorter in *I. chenchangchini*. In addition, the lateral subapical margin of the parameres bears a ridge in *I. dohertyi*, whereas it bears a minute tooth in *I. chenchangchini*. The subapical portion of the parameres in lateral view is thin, deflected and apically acute in

I. dohertyi, but thick, straight and apically rounded in *I. chenchangchini*.

Ischnopopillia chenchangchini also somewhat resembles *I. parva* (Arrow, 1917) regarding the general shape of the male genitalia. However, *I. parva* is smaller in body size and possesses shorter parameres. The basal dorsal protrusions of the parameres are longer in *I. parva* than in *I. chenchangchini*.

Etymology. This new species is dedicated to Chang-Chin Chen who kindly supported the first author's research for years. Most of the type specimens of this new species were provided by him.

Distribution. China: Yunnan.

Ischnopopillia bidentata Lin, 1979 双齿修丽金龟

Figs 10G–I, 14

Ischnopopillia bidentata Lin, 1979: 111, 112, figs 1–8 [original description, type locality: "Yunnan, Gaoligong Mt."].

Type material. The holotype is stated in the original description to be deposited in IZCAS, where its presence has not yet been verified. Because some material borrowed by late P. Lin remained unreturned, the holotype might have been located in IZGAS, but it was not found during a visit in June 2024.

Diagnosis. ***Male genitalia.*** Apex of parameres bent ventrally, subapical lateral margin with an acute tooth, subapical medial margin smooth, lateral piece widely extended. Parameres with basal dorsal and ventral protrusions. Sclerotized endophallus with an emarginated apex (based on the original drawings).

Remarks. I have not been able to examine any specimens of this species. Its resemblance to *I. sabatinellii* **sp. nov.** regarding the male genitalia support the classification under the *I. pusilla* group.

Distribution. China: Yunnan.

Ischnopopillia sabatinellii Zhao, sp. nov. 萨氏修丽金龟

https://zoobank.org/E1291910-BD44-444F-B652-83AC76CB8B5C

Figs 6D–F, 10J–L, 14

Type material (11♂♂, 12♀♀)**. Holotype.** ♂ (SCAU) "CHINA, Yunnan prov. DALI 16.6.1993 lgt. S. Becvar". **Paratypes.** 2♂♂, 1♀ (GSPC) "CHINA, Yunnan prov. DALI 16.6.1993 lgt. S. Becvar"; 1♂, 1♀ (ZMPC) "CHINA, Yunnan prov. DALI 16.6.1993 lgt. S. Becvar"; 1♂, 1♀ (CZPC) "CHINA, Yunnan prov. DALI 16. vi. 1993 lgt. S. Bečvář"; 1♂, 4♀♀ (NMPC) "YUNNAN, 26-27.vii.1996, 25°42′N 100°07′E, CANG mts, 2900 m, O. Semela leg. // ex coll. V. Kubáň National Museum Prague, Czech Republic // Ischnopopillia bidentata LIN det. Zorn, 2017"; 1♂ (CZPC) "YUNNAN, 26-27.vii.1996, 25°42′N 100°07′E, CANG mts, 2900 m, O. Semela leg. // ex coll. V. Kubáň National Museum Prague, Czech Republic"; 1♂, 3♀♀ (GSPC) "CHINA – Yünnan W Dali, 1900-2400 m 25°45′N 100°06′E 8.-11.VII.1996 Chr. Häuser leg."; 2♂♂, 1♀ (CCPC) "CHINA: Yunnan, Honghe pref., Jinping, Fenshuiling [分水岭] 2231 m 2010.IX.18–19 Xiao-Dong Yang leg."; 1♂, 1♀ (ZMPC) "CHINA: Yunnan, Honghe pref., Jinping, Fenshuiling 2231 m 2010.IX.18–19 Xiao-Dong Yang leg.".

Description. Holotype (male). Body shape elongated ovoid, weakly convex in lateral view.

***Color*.** General color yellow, with bronze luster; head, two broad patches reaching both anterior and posterior margin of pronotum (narrowly separated medially, weakly oblique basomedially, surrounding a small triangular yellow marking), lateral margins of scutellum, metasternum, distal margins of all abdominal ventrites, and a longitudinal stripe on each side of pygidium dark green; all tibiae and tarsi dark green but with coppery luster; distal half of prosternum and antennae black; fine setae pale, robust setae on legs reddish brown.

***Head*.** Clypeus ca. 2.5 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and moderately reflexed, clypeal surface densely, coarsely rugopunctate; frontal clypeal suture straight, slightly impressed at each side. An inverted triangular portion

on anterior half of frons and portions posterior to each eye with dense and coarse punctures, elsewhere with sparser but large punctures. Antennal club shorter than greatest width of clypeus, ca. 0.8 times as long as combined length of antennomeres 1–6. Interocular distance/maximum head width = 0.67. Inner margin of eye with several moderately long setae.

***Pronotum*.** Sides weakly convergent anteriad in basal third, slightly more convergent anteriad in apical half; lateral margin weakly concave in basal third, straight in apical third, weakly arched in middle; anterior margin concave, posterior margin strongly convex; both anterior and posterior angle nearly right-angled and weakly protruding; posterior marginal line absent, other marginal lines complete. Disc with sparse and minute punctures, lateral quarter with sparse and large puncture in distal half, confluent at lateral margins; lateral margin with several long setae.

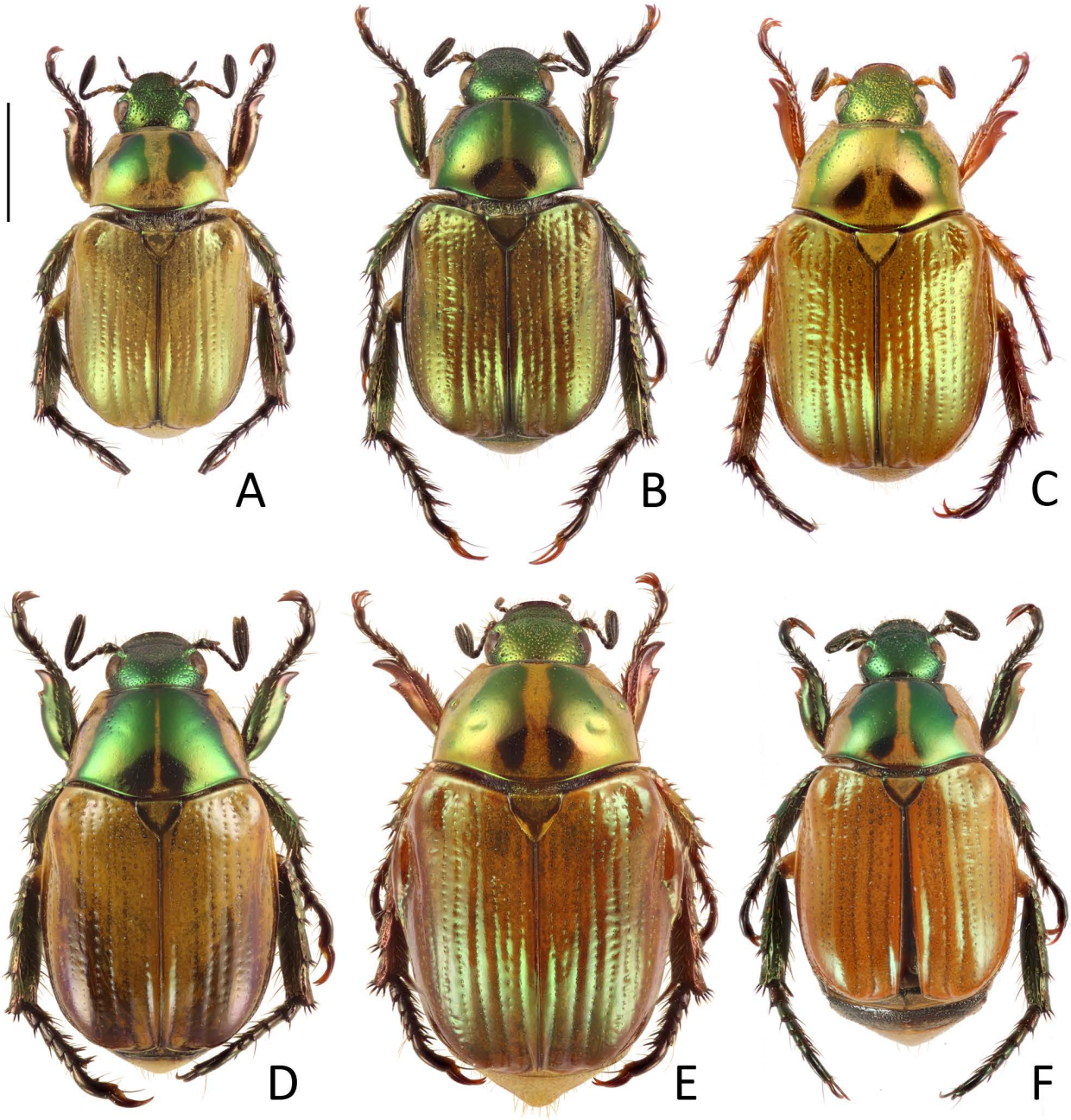

FIGURE 6. *Ischnopopillia* spp., habitus: **A** *I. bisignata* Zhao, **sp. nov.**, holotype, Mangtung; **B** *I. bisignata*, paratype male, Machang; **C** *I. bisignata*, paratype female, Xima; **D** *I. sabatinellii* Zhao, **sp. nov.**, holotype, Dali; **E** *I. sabatinellii*, paratype female, Dali; **F** *I. sabatinellii*, paratype male, Fenshuiling. Scale bar = 2 mm.

Scutellum triangular, smooth.

Elytra approximately 1.1 times longer than width; anterior margins strongly concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent and smooth. Intervals weakly elevated, subsutural interstice slightly wider than other intervals; strial punctures dense and large; subsutural interstice with a secondary stria ending at apical two fifths, interstice 2 without secondary stria, interstice 3 with a discontinuous secondary stria in basal fourth. Lateral carina evenly and slightly widened, reflexed; epipleuron with a row of sparse and short setae in basal half.

Ventral thoracic surface. Mesometasternal process compressed laterally, apically rounded, surpassing mesocoxae and reaching basal third of mesosternum. Surface of hypomeron surface with sparse and moderately long setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense, rugose, large and annular punctures, more or less confluent into striation, lateral portions with dense and long setae, broad medial portions nearly smooth and surrounded by several longer setae.

Abdomen. Pygidium wider than long, strongly convex preapically in lateral view; propygidium and pygidium with dense and coarse punctures, more or less confluent on pygidium; pygidium with sparse and long setae in distal half. Each abdominal ventrite with a row of dense and transverse punctures, denser laterally, ventrites 1–5 each with a row of moderately dense and long setae at middle, ventrite 6 with dense and long setae on distal edge.

Legs. Protibia bidentate, apical tooth acute and extending to anterior margin of protarsomere 2, subapical tooth small; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fifth. Protarsomere 5 strongly concave medially, with a blunt protuberance in basal fourth, meso- and metatarsomeres 5 each bearing a subtriangular protuberance medially. Inner protarsal and outer mesotarsal claw split apically, with both lower branches wider and longer than their upper branches; lower margin of inner protarsal claw not convex, distinctly notched basally.

Male genitalia. Apex of parameres pointed medially and acute, subapical lateral margin rounded, subapical medial margin produced ventrally and partly membranous, lateral piece with lobe shaped extension in mid-length. Parameres with basal dorsal and ventral protrusions, seam between base of parameres and ventral plate absent. Sclerotized endophallus with an emarginated apex.

Variation of males. Dark markings on body surface vary from dark green to coppery; specimens from Jinping with narrower pronotal patches, pygidium completely yellow, base of protibia with a yellow marking.

Female. Body more compacted than male. Dark patches on pronotum smaller, more triangular, always not reaching posterior margin, always widely separated medially; metasternum only bearing dark green markings in central portions, abdomen almost completely yellow, only dark at anterior margins of each abdominal ventrites; all tibiae and tarsi coppery, pro- and mesotibiae weak coppery. Antennal club as long as combined length of antennomeres 2–6; eyes smaller, interocular distance/maximum head width = 0.73. Lateral carina of elytra abruptly widened from basal fifth to apical half and strongly bulging. Pygidium nearly triangular and strongly convex preapically. Protibia thinner and shorter, apical tooth elongated, subapical tooth rounded, protarsomeres thinner and shorter, protarsomere 5 bearing a small subtriangular protuberance medially; both apical branches of inner protarsal claw smaller and almost equal.

Measurements. Body length: 7.2–7.4 mm in males (holotype 7.4 mm) and 8.8–9.1 mm in females, greatest width: 4.0–4.3 mm in males (holotype 7.4 mm) and 4.8–5.3 mm in females.

Differential diagnosis. *Ischnopopillia sabatinellii* **sp. nov.** seems to be most similar to *I. bidentata* Lin, 1979. Both species have a dorsally emarginated apex of the sclerotized endophallus and similar shape of parameres. The lateral subapical margin of the parameres is strongly emarginated and abruptly acute and protruding in *I. bidentata*, whereas it is slightly extended and rounded in *I. sabatinellii*.

Etymology. This new species is dedicated to Guido Sabatinelli, who kindly supported the first author's research and donated some type specimens of this new species.

Distribution. China: Yunnan.

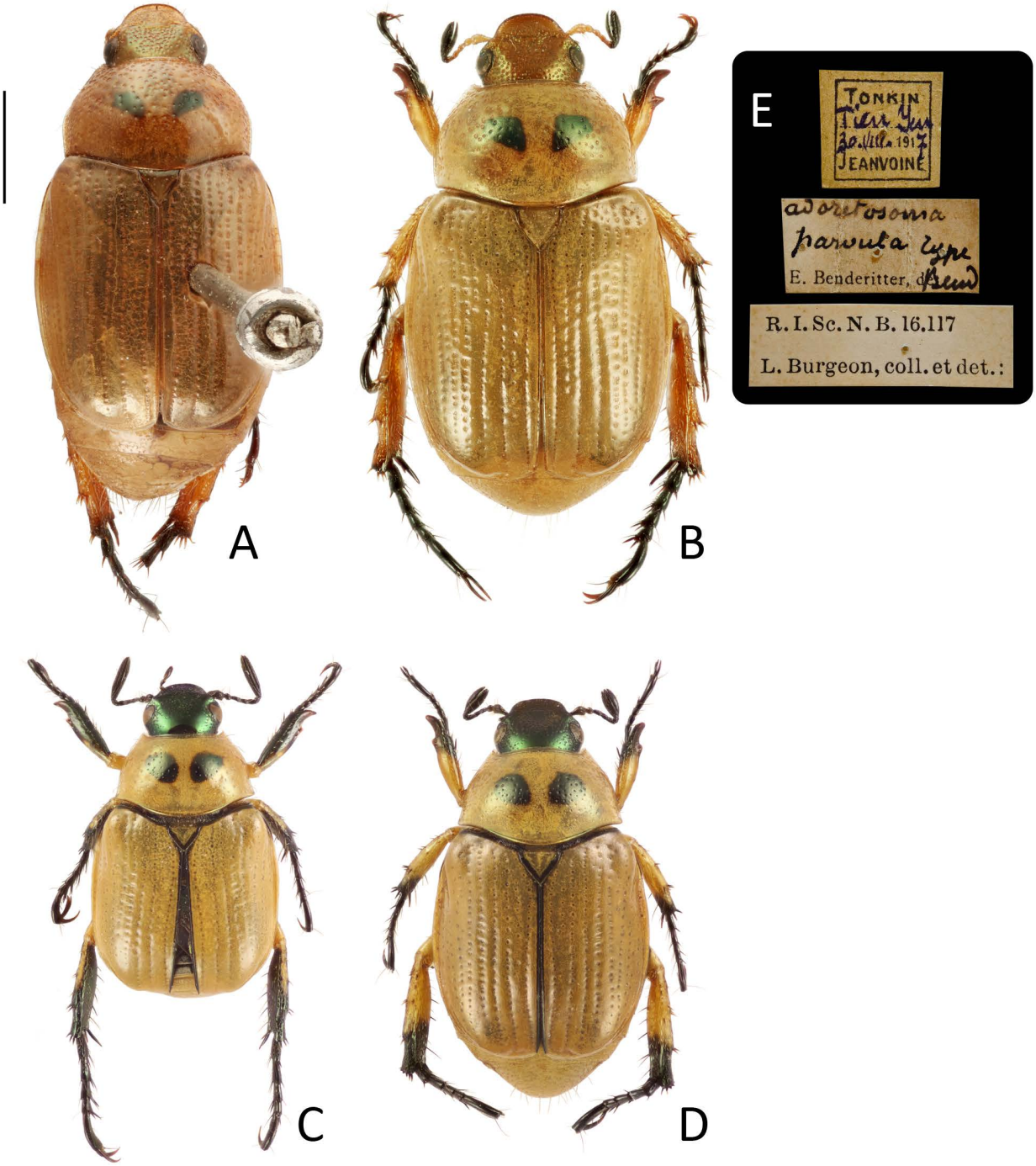

FIGURE 7. *Ischnopopillia* spp., habitus (**A–D**) and labels (**E**): **A, E** *I. parvula* (Benderitter, 1929), lectotype, Tien Yen; **B** *I. parvula*, female, La Pan Tan; **C** *I. zhengi* Zhao, **sp. nov.**, holotype, Banggunjianshan; **D** *I. zhengi*, female paratype, Banggunjianshan. Scale bar = 2 mm.

Ischnopopillia parva (Arrow, 1917) comb. nov. 小型修丽金龟

Figs 1I, 3A–D, 3G, 9G–L, 13

Anomala parva Arrow, 1917: 264 [original description, type locality: "Assam: Shillong, Cherrapanji"]; Machatschke 1957: 95 [Callistethus].

Type material (3♂♂, 2♀♀)**. Lectotype (hereby designated).** ♂ (NHMUK) "Type H. T. // Shillong Khasi Hills Assam. // India. Calcutta Mus. 1917-28 // *Anomala parva*, *Type* Arrow // NHMUK 010844272"; **Paralectotypes.** 1♂ (NHMUK) "Shillong Khasi Hills Assam. // India. Calcutta Mus. 1917-28 // NHMUK015015875"; 1♀ (NHMUK) "Cherrapunji, Assam, 4400 ft. 2-8.X.14 // Ind. Mus. // India. Calcutta Mus. 1917-28 // *Anomala parva*, *co-ty*. Arrow // NHMUK015015877"; 1♂ (NHMUK) "Cherrapunji, Assam, 4400 ft. 2-8.X.14 // S W Kemp // India. Calcutta Mus. 1917-28 // NHMUK015015878"; 1♀ (NMBF) "Cherrapunji, Assam, 4400 ft. 2-8.X.14. // S W Kemp // *Anomala parva*".

Additional material (5♂♂, 2♀♀)**. INDIA:** 1♂ (MNHN) "Assam // Ex-Musaeo H.W.Bates 1892 // G. J. Arrow Vidit 1907 // MUSÉUM PARIS 1952 COLL. R. OBERTHÜR"; 1♂ (NHMUK) "63179 // Doherty // India Or Manipur // Fry Coll. 1905-100. // NHMUK015015872"; 1♀ (NHMUK) "63182 // Doherty // India Or Manipur // Fry Coll. 1905-100. // NHMUK015015857" [paralectotype of *Ischnopopillia pusilla*]; **Locality unknown:** 2♂♂ (NHMUK) "60·15 E.I.C. // NHMUK015015870-71"; 1♂ (NHMUK) "♂ // 60·15 E.I.C. // 78 // NHMUK015015872"; 1♀ (NHMUK) "Capt. Boys [underside] India // 60·15 E.I.C. // NHMUK015015876".

Description. Lectotype (male). Body shape elongated ovoid, weakly convex in lateral view.

Color. General color of body and legs dark brown, with greenish sheen, tibiae darker; head and pronotum with strong metallic green, coppery; antenna dark brown, narrow lateral margins of pronotum, elytra, hypomeron and mesepisternum yellowish brown; propygidium and pygidium yellow, an elongated patches on each side of pygidium green; antennae dark brown; fine setae pale, robust setae on legs reddish brown.

Head. Clypeus ca. 2.5 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and not reflexed, clypeal surface densely and coarsely rugopunctate; frontal clypeal suture straight, slightly impressed at each side. An inverted triangular portion on anterior half of frons and portions posterior to each eye with very dense and coarse punctures, elsewhere with slightly sparser and smaller punctures. Antennal club slightly shorter than greatest width of clypeus and combined length of antennomeres 1–6. Interocular distance/maximum head width = 0.67. Inner margin of eye with several moderately long setae.

Pronotum. Sides subparallel in basal third, strongly convergent anteriad in apical half; lateral margin straight in basal third and apical third, broadly arched in middle; anterior margin concave, posterior margin strongly convex; anterior angle acute and protruding, posterior angle nearly right-angled and not protruding; posterior marginal line absent, other marginal lines complete. Disc with sparse and minute punctures, lateral quarter with moderately dense and large punctures in distal half, confluent at lateral margin but gradually smaller and sparser medially; lateral margin with several long setae.

Scutellum triangular, smooth.

Elytra approximately 1.1 times longer than width; anterior margins strongly concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent and smooth. Intervals almost flat, subsutural interstice widest; strial punctures moderately dense and large; subsutural interstice with a secondary stria ending at apical fourth, interstice 2 with a secondary stria ending at basal fourth, interstice 3 with a discontinuous secondary stria in basal half. Lateral carina evenly and slightly widened, reflexed; epipleuron with a few minute setae at base.

Ventral thoracic surface. Mesometasternal process compressed laterally, apically rounded, surpassing mesocoxae and reaching basal third of mesosternum. Surface of hypomeron surface with sparse and moderately long setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense, rugose, large and annular punctures, more or less confluent into striations, lateral portion with very dense and long setae, broad medial portions nearly smooth and surrounded by several longer setae.

Abdomen. Pygidium wider than long, moderately convex in lateral view; propygidium and pygidium with dense and coarse punctures, confluent on pygidium; pygidium with sparse and long setae in distal half. Each abdominal ventrite with a row of dense and transverse punctures, denser laterally, another row of punctures present on base of each ventrite, ventrites 1–5 each with a row of moderately dense and long setae at middle, ventrite 6 with

dense and long setae on distal edge.

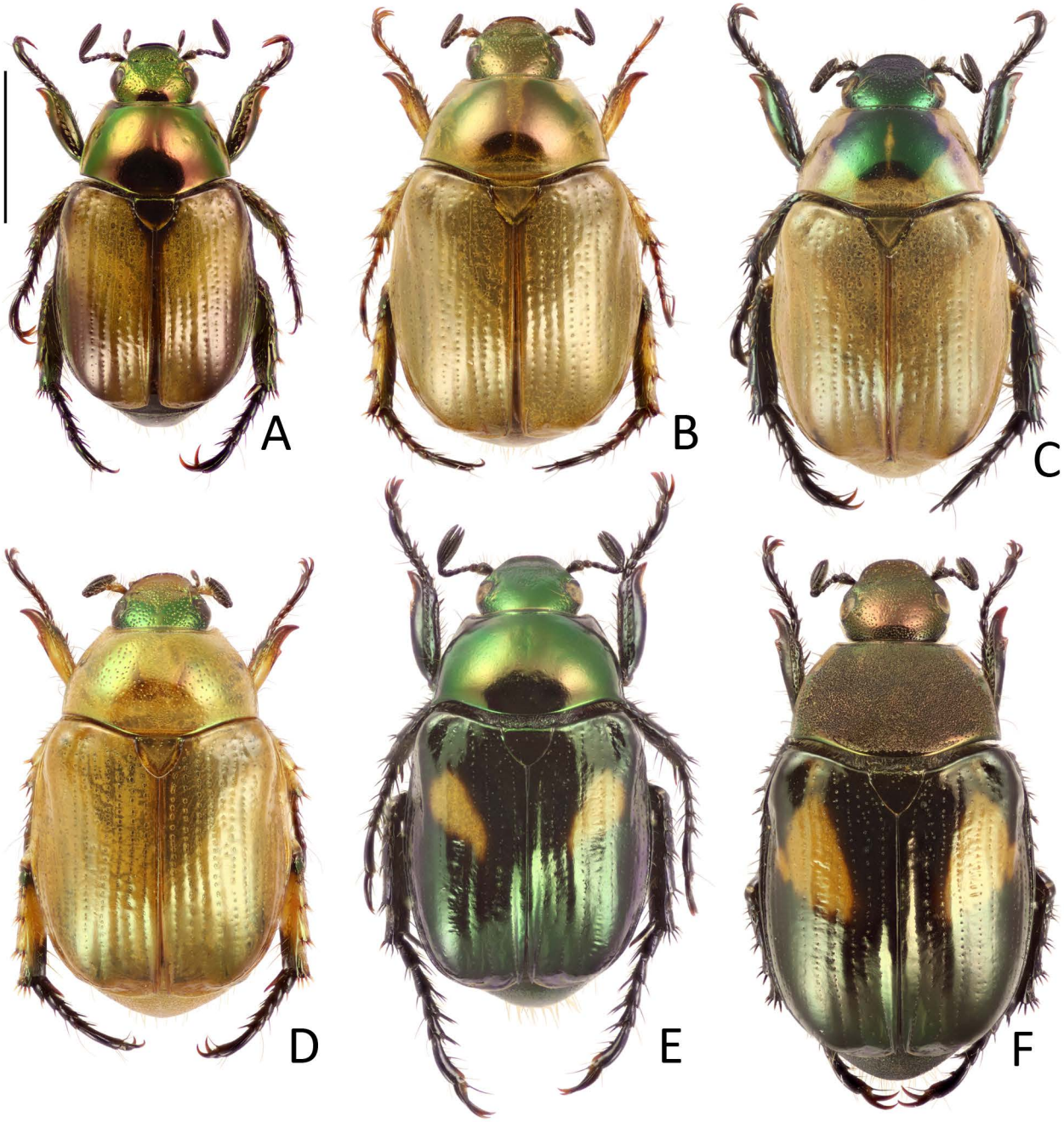

FIGURE 8. *Ischnopopillia nana* Lin, 1992, habitus: **A** male, Jinjiang; **B** female, Jinjiang; **C** male, Biyuhecun; **D** female, Biyuhecun; **E** male, Guxiang; **F** female, Gangcun. Scale bar = 2 mm.

Legs. Protibia bidentate, apical tooth acute and extending to anterior margin of protarsomere 2, subapical tooth small; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fifth. Protarsomere 5 strongly concave medially, with a blunt protuberance in basal third, meso- and metatarsomeres 5 each bearing a subtriangular protuberance medially. Inner protarsal and outer mesotarsal claw split apically, with both lower branches wider and longer than their upper branches; lower margin of inner protarsal claw not convex, distinctly notched basally.

Male genitalia. Apex of parameres pointed medially, subapical lateral margin transverse and truncate, subapical medial margin weakly convex, lateral piece absent. Parameres with basal dorsal and ventral protrusions,

seam between base of parameres and ventral plate absent. Sclerotized endophallus with a soft apex.

Variation of males. Head and pronotum not coppery; propygidium and pygidium entirely dark green. A male from Manipur generally yellow, head, two elongated and subrectangular patches on pronotum reaching anterior margin, prosternum, medial portion of metasternum, metacoxae and abdominal ventrites, a longitudinal marking on each side of pygidium and all tibiae metallic green; antennae and broad medial portions of propygidium dark brown; tarsi reddish brown.

Female. Body more compact than male. Color similar to male from same localities, but tibiae always pale reddish brown, with metatibiae darker, propygidium and pygidium completely yellow; the female from Manipur with smaller pronotal patches and uniformly yellow ventral surface. Antennal club as long as combined length of antennomeres 2–6, antennomeres 1–6 yellowish brown; eyes smaller, interocular distance/maximum head width = 0.69. Lateral carinae of elytra wider than male, wide from basal fifth to apical half, not bulging. Pygidium flatter and wider. Protibia thinner and shorter, protarsomere 5 bearing a small subtriangular protuberance medially, apical tooth elongated, subapical tooth rounded, protarsomeres thinner and shorter; both apical branches of inner protarsal claw smaller and almost equal.

Measurements. Body length: 6.2–6.9 mm in males (lectotype 6.8 mm) and 7.1–7.9 mm in females, greatest width: 3.5–4.0 mm in males (lectotype 4.0 mm) and 4.2–4.7 mm in females.

Distribution. India: Meghalaya, Manipur (new record).

Remarks. This species is transferred to the genus *Ischnopopillia* due to its morphological similarity with *I. pusilla* (Arrow, 1912) and other related species.

Ischnopopillia bisignata Zhao, sp. nov. 条斑修丽金龟

https://zoobank.org/1FBE6FCE-F985-4A0D-A924-5AFF409D0C0A

Figs 1N, 6A–C, 9M–O, 14

Type material (4♂♂, 1♀). **Holotype.** ♂ (SCAU) “Yunnan, Te-hung-chou, Lung-chuan, Mang-tung [芒东], 1770m, 2015, IX-21, Y.-T. Chung Leg. CCCC // IABD”. **Paratypes.** 2♂♂ (ZMPC) “CHINA: Yunnan, Nujiang Pref. Lushui City, Lusaihe River [鲁腮河] 25.976875°N 98.745833°E 2290m 2022.VIII.3 Yan-Dong Chen leg.”; 1♂ (ZMPC) “CHINA: Yunnan, Weixi, Machang [马场] 2016.VII.11-14 Si-Yao Huang leg.”; 1♀ (ZMPC) “CHINA: Yunnan, Dehong, Yingjiang, Tongbiguan [铜壁关], 1100m X.2018 Wei-Zong Yang leg.”.

Description. Holotype (male). Body shape elongated ovoid, weakly convex in lateral view.

***Color*.** General color yellow, with bronze luster; head, two large, elongated and subtriangular patches on central portion of pronotum, lateral margins of scutellum, lateral carinae of elytra in distal half, a large triangular marking on metasternum, distal margins of all abdominal ventrites dark green; all tibiae (except for a paler marking at base of dorsal face) and all tarsi coppery; distal half of prosternum and antennomeres 1 and 5–9 black, antennomeres 2–4 brown; fine setae pale, robust setae on legs reddish brown.

***Head*.** Clypeus ca. 2.5 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and not reflexed, clypeal surface densely and coarsely rugopunctate; frontal clypeal suture straight, slightly impressed at each side. An inverted triangular portion on anterior half of frons and portion posterior to each eye with dense and coarse punctures, elsewhere with sparser but large punctures. Antennal club slightly shorter than greatest width of clypeus and combined length of antennomeres 1–6. Interocular distance/maximum head width = 0.65. Inner margin of eye with several moderately long setae.

***Pronotum*.** Sides subparallel in basal third, strongly convergent anteriad in apical half; lateral margin weakly concave in basal third and apical third, broadly arched in middle; anterior margin concave, posterior margin strongly convex; anterior angle acute, posterior angle nearly right-angled, both strongly protruding; posterior marginal line absent, other marginal lines complete. Disc with sparse and minute punctures, lateral sixth with moderately dense

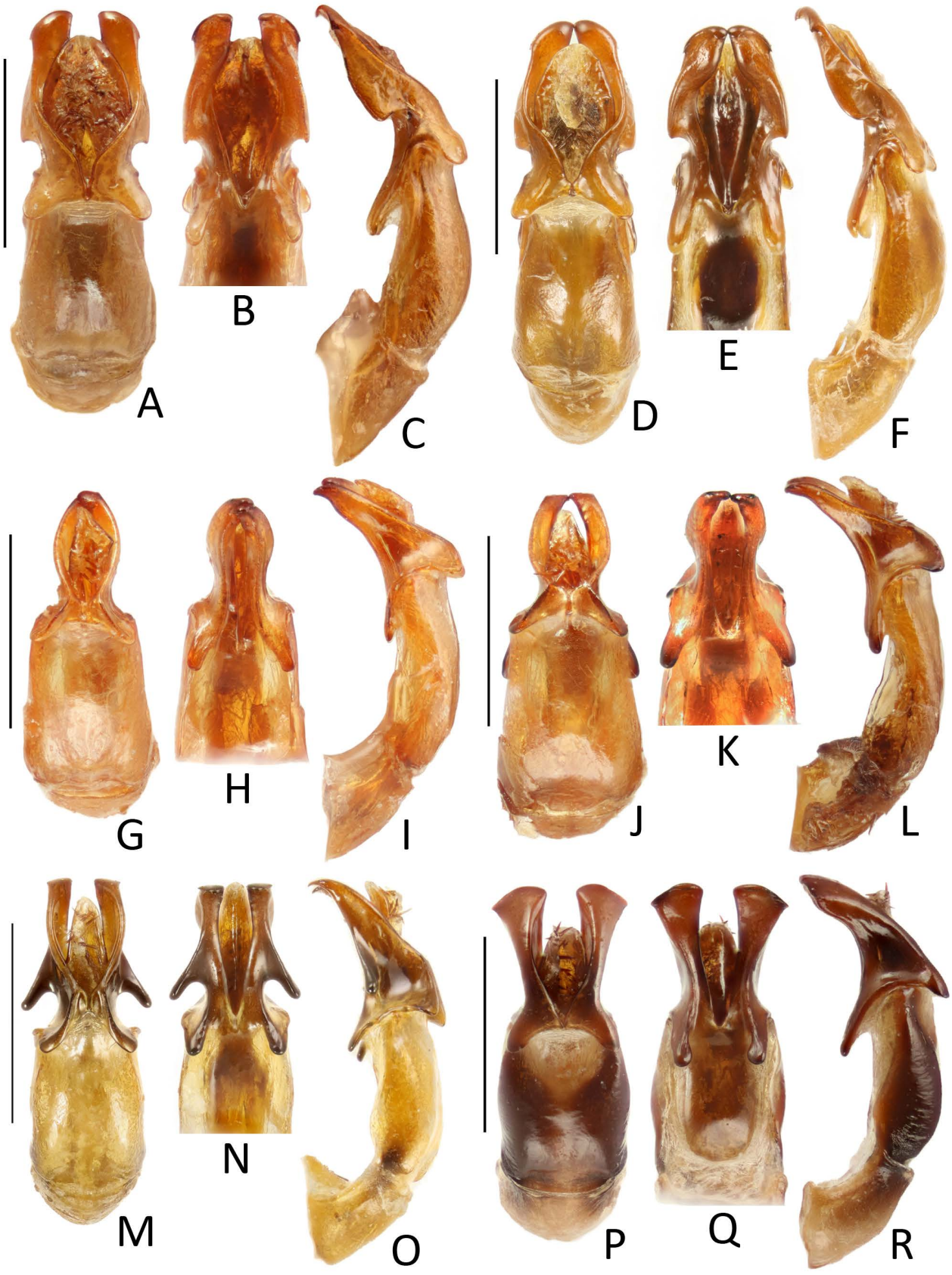

FIGURE 9. *Ischnopopillia* spp., male genitalia in dorsal, ventral and lateral views: **A–C** *I. pusilla* (Arrow, 1912), lectotype, Shillong; **D–F** *I. pusilla*, Gyirong; **G–I** *I. parva* (Arrow, 1917), lectotype, Shillong; **J–L** *I. parva*, Manipur; **M–O** *I. bisignata* Zhao, **sp. nov.**, holotype, Mangtung; **P–R** *I. zianii* Zhao & Sabatinelli, **sp. nov.**, holotype, Tabiting. Scale bar = 1 mm.

and large punctures in distal half, confluent at lateral margin but gradually smaller and sparser medially; lateral margin with several long setae.

Scutellum triangular, smooth.

Elytra approximately 1.1 times longer than width; anterior margins strongly concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent and smooth. Intervals almost flat, subsutural interstice widest; strial punctures moderately dense and large; subsutural interstice with a secondary stria ending at apical fourth, interstice 2 with a secondary stria ending at basal fifth, interstice 3 with a discontinuous secondary stria in basal two fifths. Lateral carina evenly and slightly widened, reflexed; epipleuron with a few minute setae at base.

Ventral thoracic surface. Mesometasternal process compressed laterally, apically rounded, surpassing mesocoxae and reaching basal third of mesosternum. Surface of hypomeron surface with sparse and moderately long setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense, rugose, large and annular punctures, more or less confluent into striations, lateral portions with very dense and long setae, broad medial portions nearly smooth and surrounded by several longer setae.

Abdomen. Pygidium wider than long, moderately convex in lateral view; propygidium and pygidium with dense and coarse punctures, more or less confluent on pygidium; pygidium with sparse and long setae in distal half. Each abdominal ventrite with a row of dense and transverse punctures, denser laterally, another row of punctures present on base of each ventrite, ventrites 1–5 each with a row of moderately dense and long setae at middle, ventrite 6 with dense and long setae on distal edge.

Legs. Protibia bidentate, apical tooth acute and extending to anterior margin of protarsomere 2, subapical tooth small; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fifth. Protarsomere 5 strongly concave medially, with a blunt protuberance in basal third, meso- and metatarsomeres 5 each bearing a subtriangular protuberance medially. Inner protarsal and outer mesotarsal claw split apically, with both lower branches wider and longer than their upper branches; lower margin of inner protarsal claw not convex, distinctly notched basally.

Male genitalia. Apex of parameres pointed ventrally, subapical lateral margin transverse and truncate, subapical medial margin weakly convex, lateral piece stick shaped and strongly protruding. Parameres with basal dorsal and ventral protrusions, seam between base of parameres and ventral plate absent. Sclerotized endophallus with a soft apex.

Variation of males. Elongated patches widened, reaching both anterior and posterior margin of pronotum (weakly oblique basomedially, surrounding a large triangular yellow marking); propygidium completely dark green, pygidium with a dark stripe at each side; tibiae lacking of lighter markings. Pronotum with more extensive large punctures in lateral quarter.

Female. Body more compact than male. Dark patches on pronotum not reaching anterior and posterior margins, its posterior margin transverse; abdomen completely yellow; clypeus and lateral carinae of elytra lighter; pro- and mesotibiae yellowish brown, metatibia and metatarsi dark coppery, other tarsi reddish brown. Antennal club as long as combined length of antennomeres 2–6, antennomeres 1–6 yellowish brown; eyes smaller, interocular distance/maximum head width = 0.70. Lateral carinae of elytra slightly wider than in male, not bulging. Pygidium flatter and wider. Protibia thinner and shorter, protarsomere 5 bearing a small subtriangular protuberance medially, apical tooth elongated, subapical tooth rounded, protarsomeres thinner and shorter; both apical branches of inner protarsal claw smaller and almost equal.

Measurements. Body length: 5.9–6.5 mm in males (holotype 5.9 mm) and 6.6 mm in female, greatest width: 3.2–3.5 mm in males (holotype 3.2 mm) and 3.7 mm in female.

Differential diagnosis. This new species is most similar to *Ischnopopillia parva* (Arrow, 1917). The two species can hardly be distinguished externally. A very large lateral protrusion is present in the parameres of

I. bisignata but absent in *I. parva*. Additionally, the basoventral protrusion of the parameres is longer in *I. parva*.

Etymology. The species name *bisignata* is derived from the Latin prefix *bi-* meaning "two", and *signatus* meaning "marked" or "spotted", referring to the two distinct markings on the pronotum.

Distribution. China: Yunnan.

Remarks. The female is tentatively assigned to the new species due to similar morphology and geographical distribution compared with the examined males.

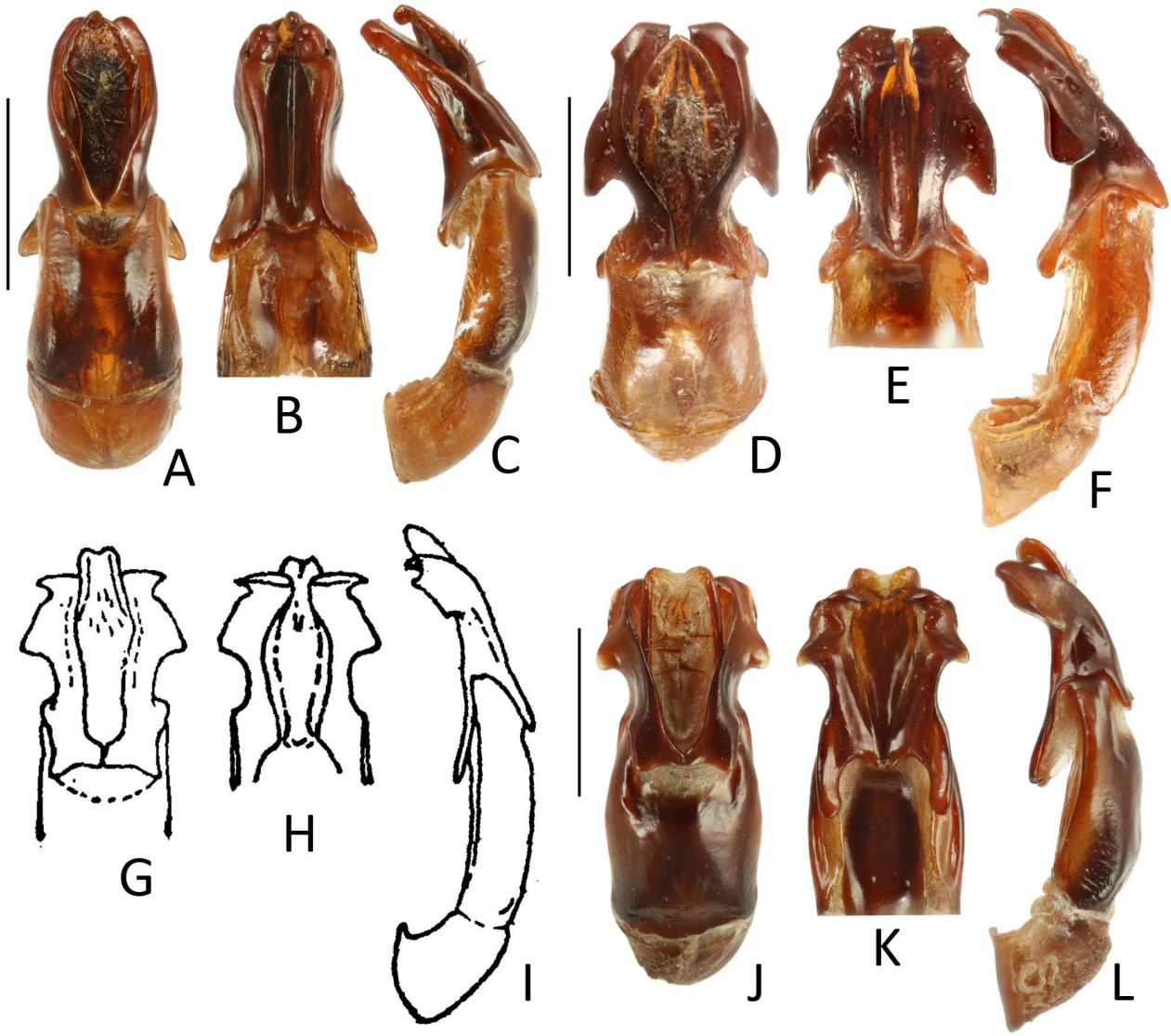

FIGURE 10. *Ischnopopillia* spp., male genitalia in dorsal, ventral and lateral views: **A–C** *I. chenchangchini* Zhao, **sp. nov.**, holotype, Houqiao; **D–F** *I. dohertyi* (Arrow, 1917), lectotype, Manipur; **G–I** *I. bidentata* Lin, 1979, reproduced from Lin (1979); **J–L** *I. sabatinellii* Zhao, **sp. nov.**, holotype, Dali. Scale bar = 1 mm.

Ischnopopillia flavomarginata Lin, 1965 黄边修丽金龟

Figs 5B, 11G–I, 13

Ischnopopillia flavomarginata Lin, 1965: 392, 394, fig. 3 [original description, type locality: "Xizang, Cuona County"]; Lin 1979: 111, figs 9–12 [description of male]; Lin 1981: 367, fig. 20.

Type material. The holotype is stated in the original description to be deposited in IZCAS, where its presence has not yet been verified. Because some material borrowed by late P. Lin remained unreturned, the holotype might have been

located in IZGAS, but it was not found during a visit in June 2024.

Additional material. 1♂ (ZMPC) "Xizang, Shannan, Cuona County, Senmuzha [森木扎] 2600m 2021.6.25 Guo-Cong Huang, Tsering Nyima".

Diagnosis. ***Male genitalia.*** Apex of parameres bent ventrally and rounded in dorsal view, subapical lateral margin ridged with an acute tooth, subapical medial margin straight, lateral piece absent. Parameres with basal dorsal and ventral protrusions, seam between base of parameres and ventral plate absent. Sclerotized endophallus with an acute apex.

Remarks. This species was erroneously classified as member of the *Ischnopopillia lateralis* species group by Machatschke (1975).

Distribution. China: Xizang.

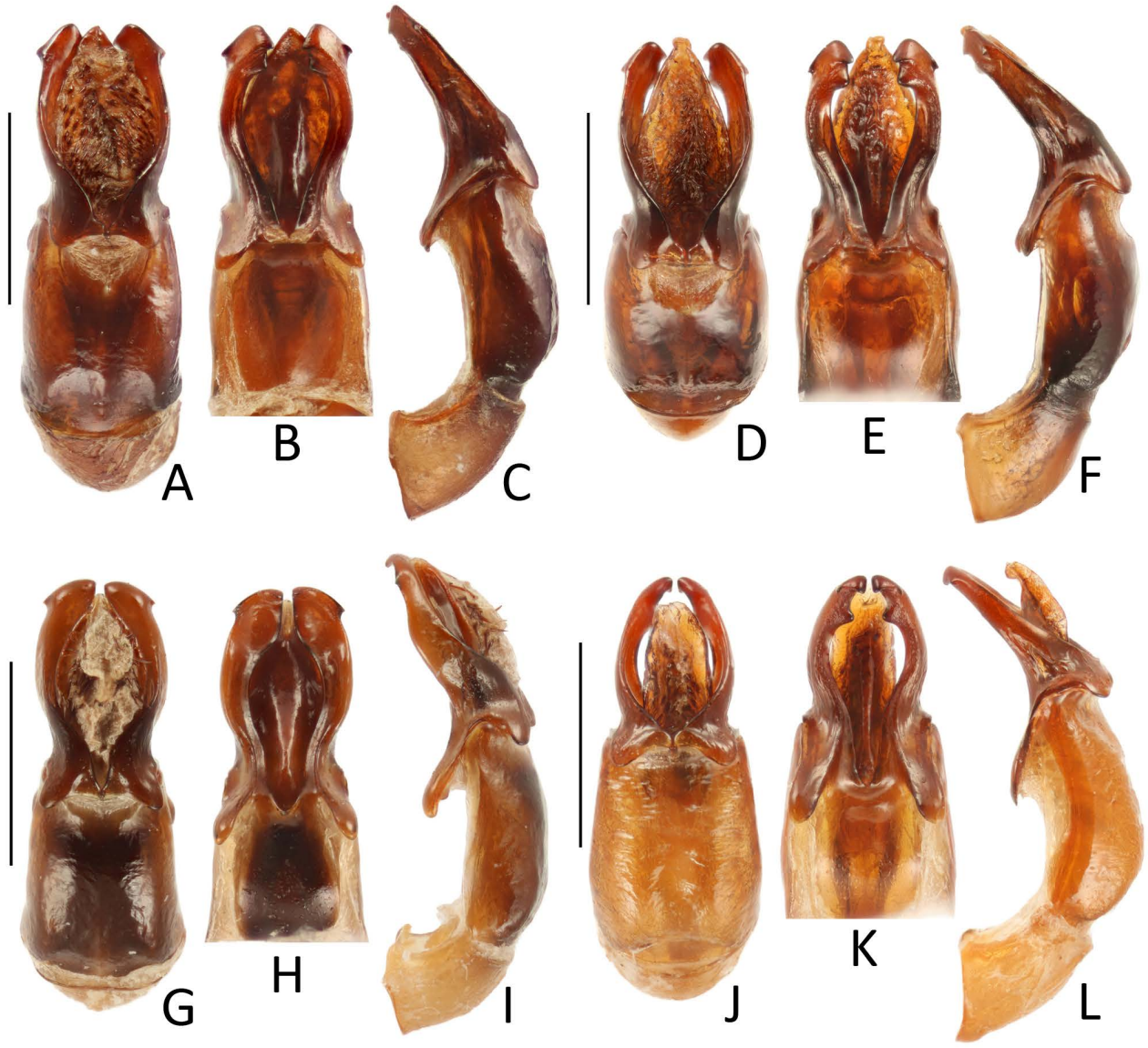

FIGURE 11. *Ischnopopillia* spp., male genitalia in dorsal, ventral and lateral views: **A–C** *I. laticollis* Zhao, **sp. nov.**, holotype, Likhu Khola Tal; **D–F** *I. laticollis*, paratype, Dinggye; **G–I** *I. flavomarginata* Lin, 1965, Senmuzha; **J–L** *I. atrivaria* Lin, 1981, Lulang. Scale bar = 1 mm.

FIGURE 12. *Ischnopopillia* spp., male genitalia in dorsal, ventral and lateral views: **A–C** *I. zhengi* Zhao, **sp. nov.**, holotype, Banggunjianshan; **D–F** *I. nana* Lin, 1992, Jinjiang; **G–I** *I. nana*, Biyuhecun; **J–L** *I. nana*, Chongzhe. Scale bar = 1 mm.

Ischnopopillia atrivaria Lin, 1981 黑变修丽金龟

Figs 1M, 5D–F, 11J–L, 13

Ischnopopillia atrivaria Lin, 1981: 366, 381, fig. 18 [original description, type locality: "Xizang, Bomi, Zhamu, 2750 m"]; Lin 1988: 252.

Type material. The holotype is stated in the original description to be deposited in IZCAS, where its presence has not yet been verified. Because some material borrowed by late P. Lin remained unreturned, the holotype might have been located in IZGAS, but it was not found during a visit in June 2024.

Additional material (36♂♂, 16♀♀)**.** 1♂, 3♀♀ (ZMPC) "Xizang, Linzhi City, Milin County, Milin Town [米林镇], Dongduo Village [东多村] 2012.VIII.2 Chun-Lin Hu leg."; 5♂♂, 4♀♀ (IZGAS) "Xizang Bomi 1976.6.24 2690 m"; 1♂, 1♀ (SYSU) "Xizang, Linzhi Area, Bomi County, Gangdui Village [岗堆村] 29°52′25″N 95°42′14″E 2642m 2018.VII.6

Zu-Long Liang, Shi-Shuai Wang"; 3♂♂ (CZPC) "E Tibet, Bomi env., 3000m 29°52'N, 95°45'E mixed forest, 9-10.VII.1997 Jaroslav Turna leg."; 2♀♀ (CZPC) "E Tibet, Bomi env., 29°52'N,95°45' 9.-10.VII. 1997 E mixed forest, ca. 3000m M. Trýzna et O. Safránek lgt."; 3♂♂, 2♀♀ (CZPC) "China E-TIBET, valley SW of TANGMAI [通麦] & env. 4.-5.7.'96 30°02'-07'N 95°01'-07'E lgt. L.&R. BUSINSKÝ 2100-2300m"; 3♂♂ (NHMW) "CHINA, E - TIBET, 2050-2400m N of BRAHAMAPUTRA great bend 30°00′-07′/ 94°52′-95°09′ 16-20.7.92 L.+R. BUSINSKÝ lgt."; 1♂ (NHMW) "CHINA, E - TIBET, W of BRAHAMAPUTRA great bend 29°40′-45′/ 94°44′ 3400m 21.7.92 L.+R. BUSINSKY lgt."; 1♀ (NHMUK) "S.E.Tibet: Tsangpo Valley, Gyala. 9000 ft. 19.vii.1924. F.Kingdon Ward // Brit. Mus. 1925–189. // NHMUK015015868"; 1♂ (ZMPC) "CHINA: Tibet, Nyingchi, Bayi dist., Lulang [鲁朗], 3200 m, 2020.VII.25, Yu-Chen Zheng leg."; 2♂♂, 1♀ (ZMPC) "CHINA: Tibet, Nyingchi, Bayi dist., Chongzhe Vill. [重这村], 3100 m, 2018.VII.20"; 3♂♂, 1♀ (ZMPC) "CHINA: Tibet, Nyingchi, Bayi dist. [巴宜区], Bayi Town [八一镇], H=2927m, 2019.VII.19 Bo-Yan Li leg."; 3♂♂ (ZMPC) "CHINA: Tibet, Nyingchi, Medog, Bolonggong [波隆贡] (80K), 2150 m, 2020.VIII.20 Yu-Chen Zheng leg."; 8♂♂, 1♀ (ZMPC) "CHINA: Tibet, Nyingchi, Medog, Bolonggong (80K) 29°39′30.78″N 95°29′24.64″E 2100 m 2016.VII.19 Hao Xu & Jian-Yue Qiu leg."; 1♂ (CZPC) "TIBET Nyingtri Basum-Tso [巴松措] 3500 25.-26.VI.95 HEINZ leg."; 1♂ (CZPC) "Tibet (Nyingtri): Umg. Basum-tso 3400-3500m 25./26.VI Herinz leg.1995".

Diagnosis. ***Male genitalia.*** Apex of parameres rounded, subapical lateral margin with a small hump, subapical medial margin with two blunt teeth, lateral piece absent. Parameres with basal dorsal and ventral protrusions, seam between base of parameres and ventral plate absent. Sclerotized endophallus with a soft apex.

Distribution. China: Xizang.

Remarks. *Ischnopopillia atrivaria* is sympatric with *I. nana* Lin, 1992 at several localities in southeastern Xizang. Whereas *I. nana* from Yunnan is highly different in color, the Xizang populations of *I. nana* show a color pattern very similar to that of *I. atrivaria* (see remarks of *I. nana*). However, they can still be separated based on consistent external morphological characters. The pronotal lateral margins are more concave in the basal half in *I. atrivaria*. In females, the lateral carina of the elytra is bulging in *I. atrivaria* but flat and somewhat reflexed in *I. nana*.

Ischnopopillia laticollis Zhao, sp. nov. 宽胸修丽金龟

https://zoobank.org/7096734D-DC31-4C14-A797-3C1B8A611EE7

Figs 1D, 1G, 1J, 4E–F, 5A, 11A–F, 13

Type material (9♂♂, 6♀♀)**. Holotype.** ♂ (NMBF) "NEPAL Likhu Khola Tal [ca. 27°15′2″N, 86°12′16″E] 1700 m 1.VIII.[19]62 leg. G. Ebert // Coll. G. Frey NMB". **Paratypes. NEPAL:** 5♂♂, 5♀♀ (NMBF) "NEPAL Likhu Khola Tal 1700 m 1.VIII.[19]62 leg. G. Ebert // Coll. G. Frey NMB"; 2♂♂, 1♀♀ (NMBF) "NEPAL Likhu Khola Tal 1700 m 1.VIII.[19]62 leg. G. Ebert // *Anomala erythoptera* Kr. det. G. Frey, 1963 Coll. G. Frey NMB"; **CHINA:** 1♂ (ZMPC) "CHINA, Xizang, Shigatse, Dinggye Co., Xiuxiongma Vill. to Jiuyan Hot Spring [秀雄玛村至九眼温泉路上] (27.90290321°N, 87.38127131°E) - (27.91759952°N, 87.36368509°E) 2650-3060m 2023.VII.3 daytime Yi-Hang Li leg."

Description. Holotype (male). Body shape elongated ovoid, weakly convex in lateral view.

Color. General color of body and legs dark brown, strongly coppery, with greenish tinge; antennomeres 1–6, lateral margins of pronotum, hypomeron, elytra, and narrow lateral margin of metafemur yellowish brown; antennal club black; fine setae pale, robust setae on legs reddish brown.

Head. Clypeus ca. 2.3 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and moderately reflexed, clypeal surface with large and confluent punctures; frontal clypeal sinuate and slightly impressed at each side. An inverted triangular portion on anterior half of frons with dense and medium punctures, punctures sparser on portions posterior to each eye, elsewhere smooth. Antennal club distinctly shorter than greatest width of clypeus, as long as combined length of antennomeres 2–6. Interocular distance/maximum head width = 0.65. Inner margin of eye with several moderately long setae.

***Pronotum*.** Sides weakly convergent anteriad in basal half, more strongly convergent anteriad in apical half; lateral margin straight in apical third, weakly arched in basal two thirds; anterior margin concave, posterior margin moderately convex; anterior angle acute and protruding, posterior angle nearly right-angled and not protruding; posterior marginal line absent, other marginal lines complete. Disc smooth, with very sparse and minute punctures; lateral margin with several long setae.

Scutellum triangular, smooth.

Elytra approximately 1.1 times longer than width; anterior margins moderately concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent and smooth. Intervals weakly elevated, subsutural interstice widest; strial punctures moderately dense and large; subsutural interstice with a secondary stria ending at apical fourth, interstice 2 with several disperse punctures at basal sixth, interstice 3 without secondary striae. Lateral carina evenly and slightly widened, reflexed; epipleuron with a few minute setae at base.

***Ventral thoracic surface*.** Mesometasternal process compressed laterally, apically rounded, slightly surpassing mesocoxae. Hypomeron with moderately dense and moderately long setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense, rugose, and oblique punctures, more or less confluent into striations laterally, lateral portions with very dense and long setae, broad medial portions nearly smooth and surrounded by several longer setae.

***Abdomen*.** Pygidium wider than long, moderately convex in lateral view; propygidium and pygidium with very dense and coarse punctures, more or less confluent on pygidium; pygidium with sparse and long setae in distal third, and moderately dense and short setae in basal two thirds. Each abdominal ventrite with a row of dense and transverse punctures, anterior margin with an additional row of dense but shorter punctures, all punctures denser and irregularly doubled laterally, ventrites 1–5 each with a row of moderately dense and long setae at middle, ventrite 6 very densely and coarsely punctate in basal half, with very dense and long setae on distal edge.

Legs. Protibia bidentate, apical tooth acute and extending to anterior margin of protarsomere 2, subapical tooth small; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fourth. Protarsomere 5 strongly concave medially, with a blunt protuberance in basal fourth, meso- and metatarsomeres 5 each bearing a triangular protuberance medially. Inner protarsal and outer mesotarsal claw split apically, with both lower branches wider and longer than their upper branches; lower margin of inner protarsal claw not convex, distinctly notched basally.

Male genitalia. Apex of parameres rounded, subapical lateral margin straight with a right-angled tooth, subapical medial margin with two blunt teeth, lateral piece absent. Parameres with basal dorsal and ventral protrusions, seam between base of parameres and ventral plate present. Sclerotized endophallus with an acute apex.

Variation of males. No significant morphological variation observed.

Female. Dark patches on disc of pronotum separated by a narrow line medially; metasternum in lateral quarter yellowish brown and dark green medially; abdomen generally yellowish brown, abdominal ventrites 1–5 each dark green at anterior margin and posterior half; anterior margin of clypeus and scutellum reddish brown; legs yellowish brown, metatibia and metatarsus darker. Antennal club approximately half as long as greatest width of clypeus, as long as combined length of antennomeres 2–6; eyes smaller, interocular distance/maximum head width = 0.7. Lateral carina of elytra abruptly widened from basal fifth to apical two fifths and bulging. Pygidium flatter and wider. Protibia thinner and shorter, apical tooth elongated, protarsomeres thinner and shorter, protarsomere 5 without protuberance medially; both apical branches of inner protarsal claw smaller and almost equal in size.

Measurements. Body length: 6.8–7.5 mm in males (holotype 7.5 mm) and 7.1–8.8 mm in females, greatest width: 3.5–4.2 mm in males (holotype 4.0 mm) and 4.0–4.6 mm in females.

Differential diagnosis. *Ischnopopillia laticollis* **sp. nov.** is closely related to *I. atrivaria* Lin, 1981 in appearance because both species are lacking larger punctures on pronotum. However, the sides of the pronotum are

less convergent in the apical half, and the striae on the elytra are more impressed in *I. laticollis*. The elytra are always yellowish brown in *I. laticollis* but usually dark green with variable yellowish pattern in *I. atrivaria*. The females of *I. atrivaria* sometimes have completely yellow elytra, but the pronotal markings are smaller than in *I. laticollis*. The parameres of *I. laticollis* are wider and bearing a subapical lateral ridge, which is absent in *I. atrivaria*.

The parameres of *Ischnopopillia laticollis* are also similar to those of *I. flavomarginata* Lin, 1965 for having the subapical lateral ridge. However, the subapical medial margin possesses two teeth in *I. laticollis*, whereas it is smooth and straight in *I. flavomarginata*. The margins of the parameres are also thinner in lateral view and more sinuate in *I. flavomarginata*. The large and dense punctures on the frons and the pronotum, the more widely spaced protibial teeth and the shorter protarsomere 5 of *I. flavomarginata* allow an easy separation from *I. laticollis*.

Etymology. The species name *laticollis* is derived from the Latin adjectives *latus* (broad) and *collis* (neck), referring to the notably widened anterior half of the pronotum compared with related species.

Distribution. China: Xizang; Nepal: Koshi.

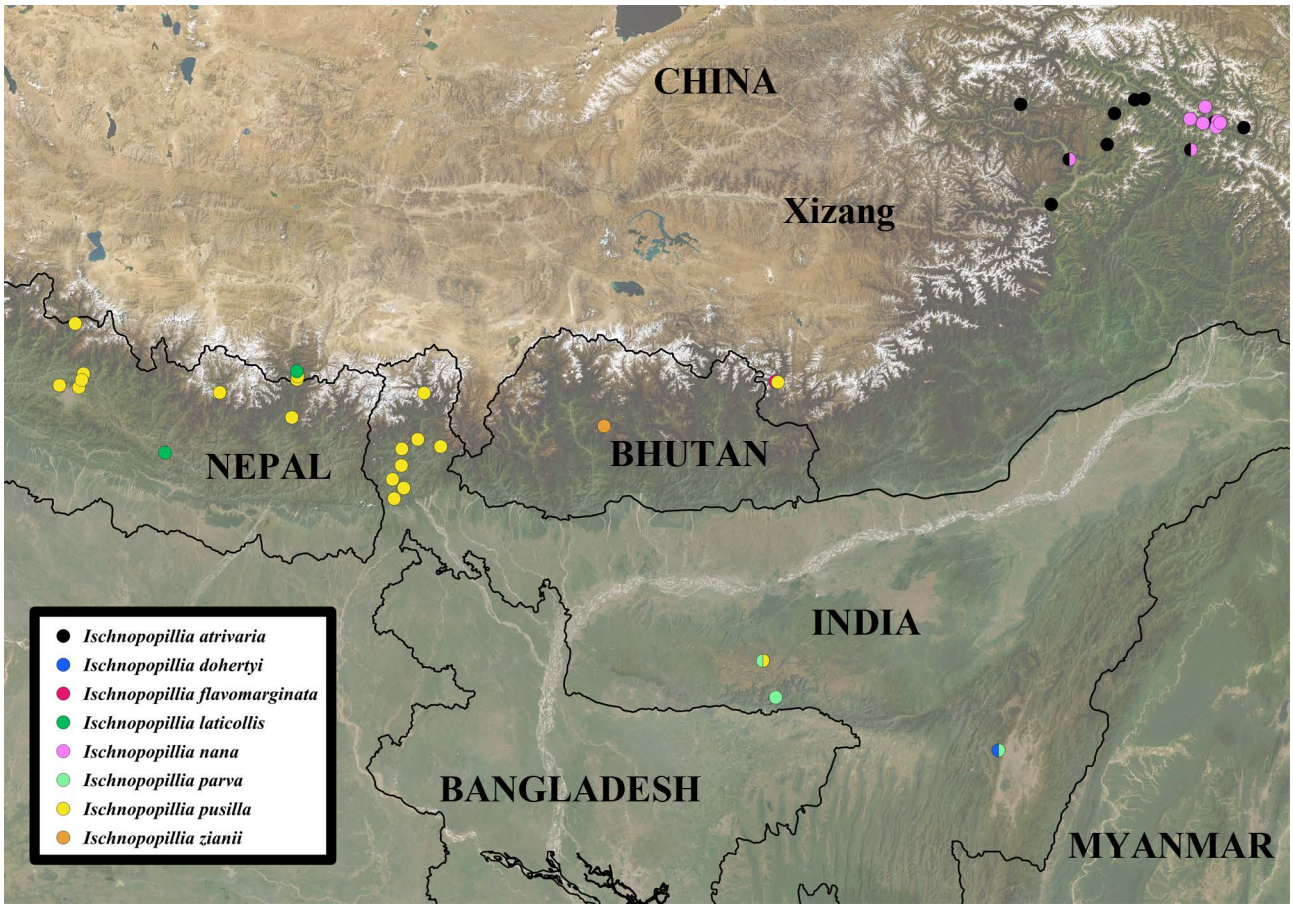

FIGURE 13. Distribution of *Ischnopopillia* spp.

Ischnopopillia zianii Zhao & Sabatinelli, sp. nov. 齐亚尼修丽金龟

https://zoobank.org/FDED3B83-92F2-4AA1-9BD5-169267C1EF73

Figs 1B, 5C, 9P–R, 13

Type material. Holotype. ♂ (SCAU) "BHUTAN, Wandi Phobjikha Valley Tabiting vill. [ca. 27°27′50″N, 90°10′43″E, Wandi Phobjik] 2900m 18.VII.2016, leg. S. Ziani".

Description. Holotype (male). Body shape elongated ovoid, weakly convex in lateral view.

***Color*.** General color of body and legs blackish green, glossy, antennae and tarsi without greenish luster; lateral edges of pronotum, elytra, abdomen, metatrochanter and metafemur yellowish brown; abdominal ventrites, propygidium, pygidium and metafemur with extensive blurred shade of dark green, lighter portions mainly on the lateral and distal half of each abdominal ventrite, as well as the lateral angle and preapical portion of pygidium; antennal club black; fine and robust setae pale.

***Head*.** Clypeus ca. 2.3 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and moderately reflexed, clypeal surface with very dense and large punctures; frontal clypeal sinuate and slightly impressed at each side, impression somewhat indistinct medially. An inverted triangular portions on anterior half of frons with very dense and large punctures, punctures sparser on portions posterior to each eye, elsewhere with sparse and small punctures. Antennal club shorter than greatest width of clypeus, 0.8 times as long as combined length of antennomeres 1–6. Interocular distance/maximum head width = 0.7. Inner margin of eye with several moderately long setae.

***Pronotum*.** Sides weakly convergent anteriad in basal third, strongly convergent anteriad in apical half; lateral margin weakly concave in basal third, moderately arched in middle, and straight in apical third; anterior margin concave, posterior margin strongly convex; anterior angle acute and protruding, posterior angle nearly right-angled and not protruding; posterior marginal line absent, other marginal lines complete. Disc with sparse and minute punctures, lateral sixth with dense and large punctures, punctures denser and confluent at lateral margins; lateral margin with several long setae.

Scutellum subtriangular, lateral margin convex, surface smooth.

Elytra approximately 1.1 times longer than width; anterior margins moderately concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent and smooth. Intervals weakly elevated, subsutural interstice widest; strial punctures moderately dense and large; subsutural interstice with a secondary stria ending at apical fourth, interstice 2 with several disperse punctures at basal sixth, interstice 3 without secondary striae. Lateral carina evenly and slightly widened, reflexed; epipleuron with a few minute setae at base.

***Ventral thoracic surface*.** Mesometasternal process compressed laterally, anterior margin somewhat truncate, apex broadly rounded and slightly surpassing mesocoxae. Hypomeron with moderately dense and moderately long setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense and large punctures, confluent into rugose striations, lateral portions with very dense and long setae, broad medial portions nearly smooth and surrounded by several longer setae.

***Abdomen*.** Pygidium wider than long, moderately convex in lateral view; propygidium and pygidium with dense, transverse, and coarse punctures, more or less confluent on pygidium; pygidium with sparse and long setae in distal third, and moderately dense and short setae in basal two thirds. Each abdominal ventrite with a row of dense and transverse punctures, anterior margin with an additional row of sparser punctures, ventrites 1–5 each with a row of moderately dense and long setae at middle, ventrite 6 with dense and long setae on distal edge.

Legs. Protibia bidentate, apical tooth acute and extending to anterior margin of protarsomere 2, subapical tooth small; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fourth. Protarsomere 5 strongly concave medially, with a blunt protuberance in basal fourth, meso- and metatarsomeres 5 each bearing a triangular protuberance medially. Inner protarsal and outer mesotarsal claw split apically, with both lower branches wider and longer than their upper branches; lower margin of inner protarsal claw not convex, distinctly notched basally.

Male genitalia. Apex of parameres rounded, subapical lateral margin with a large and right-angled tooth, subapical medial margin smooth, lateral piece absent. Parameres with basal dorsal and ventral protrusions, seam between base of parameres and ventral plate absent. Sclerotized endophallus with a rounded apex.

Female. Unknown.

Measurements. Body length: 6.8 mm, greatest width: 3.6 mm.

Differential diagnosis. *Ischnopopillia zianii* **sp. nov.** is morphologically close to *I. parva* (Arrow, 1917). The new species can be easily identified by a right-angled tooth on the lateral subapical margin of the parameres. The parameres are gradually widening from the base to the rounded apical margins.

Etymology. This new species is named after Stefano Ziani, who collected the holotype specimen.

Distribution. Bhutan: Wangdue Phodrang.

Ischnopopillia parvula (Benderitter, 1929) comb. nov. 双斑修丽金龟

Figs 1C, 7A–B, 7E, 14

Adoretosoma parvula [sic!] Benderitter, 1929: 108 [original description, type locality: "Chapa, Tien Yen"].

Type material. Lectotype (hereby designated). ♀ (IRSNB) "TONKIN Tien Yen 30.VIII.1917 JEANVOINE // *Adoretosoma parvula Type Bend* E. Benderitter, det. // R. I. Sc. N. B. 16.117 L. Burgeon, coll. et det.:".

Additional material. 1♀ (ZMPC) "VIETNAM: Yen Bai prov. La Pan Tan, 2000 m 2024.VII local collector".

Redescription. Lectotype (female). Body shape elongated ovoid, weakly convex in lateral view.

***Color*.** General color yellow, glossy; two separated and nearly triangular patches at central portion pronotum, apical portions of all tibiae and all tarsi dark green; antennomere 5 and antennal club dark brown; fine setae pale, robust setae on legs reddish brown.

***Head*.** Clypeus ca. 2.9 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and weakly reflexed, clypeal surface densely, coarsely rugopunctate; frontal clypeal suture straight, slightly impressed at each side. Frons and vertex with dense and coarse punctures, elsewhere with slightly sparser but large punctures. Antennal club shorter than greatest width of clypeus, as long as combined length of antennomeres 2–6. Interocular distance/maximum head width = 0.70. Inner margin of eye with several moderately long setae.

***Pronotum*.** Sides more or less subparallel in basal third, strongly convergent anteriad in apical half; lateral margin straight in basal third and apical third, broadly arched in middle; anterior margin concave, posterior margin strongly convex; anterior angle acute and protruding, posterior angle nearly right-angled and weakly protruding; posterior marginal line absent, other marginal lines complete. Disc with moderately dense and large punctures, confluent at lateral margins, sparser and smaller in basal third medially; lateral margin with several long setae.

Scutellum triangular, with a few minute punctures.

Elytra approximately 1.07 times longer than width; anterior margins moderately concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent. Intervals almost flat, interstices 1 and 3 slightly wider than other intervals; strial punctures dense and large; subsutural interstice with a secondary stria ending at apical third, interstice 2 with a secondary stria ending at basal two fifths, interstice 3 with a secondary stria ending at apical half. Lateral carina evenly and slightly widened, reflexed; epipleuron with a few minute setae at base.

***Ventral thoracic surface*.** Mesometasternal process compressed laterally, anterior margin truncated, apex broadly rounded and slightly surpassing mesocoxae. Surface of hypomeron surface with sparse and moderately long setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense, rugose, large and annular punctures, more or less confluent into striation, lateral portions with sparse and short setae, broad medial portions nearly smooth.

***Abdomen*.** Pygidium subtriangular, weakly arched in lateral view; propygidium with large and transverse punctures, pygidium with dense and large punctures confluent into reticulate striations; pygidium with sparse and long setae along distal margin. Each abdominal ventrite with a row of dense and transverse punctures, denser laterally, ventrites 1–5 each with a row of sparse and long setae at middle, ventrite 6 with dense and long setae on

distal edge.

Legs. Protibia bidentate, apical tooth elongated, acute and extending to middle of protarsomere 3, subapical tooth large and acute; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fifth. Protarsomeres thin, each tarsomere 5 bearing a subtriangular protuberance medially, that of protarsomere 5 smaller. Inner protarsal and outer mesotarsal claw split apically, both upper and lower branches almost equal in size; lower margin of inner protarsal claw not convex, not notched basally.

Male. Unknown.

Measurements. Body length: 7.6–8.3 mm (lectotype 7.6 mm), greatest width: 4.4–4.8 mm (lectotype 4.4 mm).

Differential diagnosis. *Ischnopopillia parvula* is characterized by the almost entirely yellow body color. All the other species of the *I. pusilla* group have a completely or partly dark head.

Distribution. Vietnam: Lao Cai, Yen Bai (new record).

Remarks. According to Benderitter (1929), the type series comprises two females, one of which is designated hereby as the lectotype. The type locality "Tien Yen" is a place in Quang Ninh, where the elevation is below 100 meters (Clermont 1932), making this record highly questionable. It remains unclear whether Benderitter (1929) regarded this locality as belonging to Chapa, or whether Chapa actually refers to the locality of the paralectotype. However, the latter interpretation appears more likely. Although the male of *I. parvula* remains unknown, the discovery of the morphologically similar *I. zhengi* Zhao, **sp. nov.** indicates that *I. parvula* also belongs to the *I. pusilla* group.

Ischnopopillia zhengi Zhao, sp. nov. 郑氏修丽金龟

https://zoobank.org/6D882A47-5DBB-450C-8C13-AF23477DFF3D

Figs 1O, 7C–D, 12A–C, 14

Type material (3♂♂, 3♀♀)**. Holotype.** ♂ (SCAU) "CHINA: Yunnan, Dehong, Longchuan, Mt. Banggunjianshan [邦棍尖山] 1600 m 2022.VIII.13 [daytime, on flowers] Yu-Chen Zheng leg. // IZY1". **Paratypes.** 2♂♂, 2♀♀ (ZMPC) "CHINA: Yunnan, Dehong, Longchuan, Mt. Banggunjianshan 1600m 2022.VIII.13 [daytime, on flowers] Yu-Chen Zheng leg."; 1♀ (CCPC) "Yunnan, Te-hung-chou, Ying-chiang, His-ma [昔马], Hui-he power station [灰河电站] 1514 m 2015, IX-6 Y.-T. Chung Leg. CCCC".

Description. Holotype (male). Body shape elongated ovoid, weakly convex in lateral view.

Color. General color yellow, glossy; head, two separated and nearly round patches at central portion of pronotum, lateral margins of scutellum, anterior margins, lateral margins of elytra besides humeral protuberance, and suture of elytra, all tibiae (except for an elongated patch on each base) and tarsi dark green; antennae black; fine setae pale, robust setae on legs reddish brown.

Head. Clypeus ca. 2.9 times wider than long, subtrapezoidal, sides strongly convergent anteriad, anterior angle broadly rounded, anterior margin almost straight medially and weakly reflexed, clypeal surface densely, coarsely rugopunctate; frontal clypeal suture straight, slightly impressed at each side. An inverted triangular portion on anterior half of frons and portions posterior to each eye with dense and coarse punctures, elsewhere smooth. Antennal club as long as greatest width of clypeus and combined length of antennomeres 1–6. Interocular distance/maximum head width = 0.68. Inner margin of eye with several moderately long setae.

Pronotum. Sides weakly convergent anteriad in basal third, strongly convergent anteriad in apical half; lateral margin weakly concave in basal third and apical third, moderately arched in middle; anterior margin concave, posterior margin strongly convex; anterior angle acute and protruding, posterior angle nearly right-angled and weakly protruding; posterior marginal line absent, other marginal lines complete. Disc with sparse and large punctures, confluent at lateral margins but smaller medially; lateral margin with several long setae.

Scutellum triangular, with a few minute punctures.

Elytra approximately 1.05 times longer than width; anterior margins strongly concave, lateral margins weakly convex, widest at middle. Humeral and apical protuberances moderately prominent. Intervals almost flat, interstices 1 and 3 slightly wider than other intervals; strial punctures dense and large; subsutural interstice with a discontinuous secondary stria ending at apical half, interstice 2 with a few punctures near base, interstice 3 with a discontinuous secondary stria along humeral protuberance. Lateral carina evenly and slightly widened, reflexed; epipleuron with a few minute setae at base.

Ventral thoracic surface. Mesometasternal process compressed laterally, apically truncated, slightly surpassing mesocoxae. Surface of hypomeron surface with sparse and short setae, edges of hypomeron with dense and long setae; ventral metathoracic surface and metacoxa with very dense, rugose, large and annular punctures, more or less confluent into striations, lateral portions with sparse and short setae, broad medial portion nearly smooth.

***Abdomen*.** Pygidium wider than long, strongly weakly convex in lateral view; propygidium and pygidium with moderately dense and coarse punctures; pygidium with sparse and long setae in distal half. Each abdominal ventrite with a row of dense and transverse punctures, denser laterally, ventrites 1–5 each with a row of sparse and long setae at middle, ventrite 6 with dense and long setae on distal edge.

Legs. Protibia bidentate, apical tooth acute and extending to anterior margin of protarsomere 2, subapical tooth small; lateral face of meso- and metatibiae each bearing two transverse groups of robust setae emerging from a carina, with some shorter robust setae in basal fifth. Each tarsomere 5 bearing a blunt, subtriangular protuberance medially. Inner protarsal and outer mesotarsal claw split apically, with both lower branches slightly wider and longer than their upper branches; lower margin of inner protarsal claw not convex, distinctly notched basally.

Male genitalia. Apex of parameres rounded, subapical lateral margin with a small tooth, subapical medial margin straight, lateral piece absent. Parameres without basal protrusions, seam between base of parameres and ventral plate present. Sclerotized endophallus with a soft apex.

Variation of males. No significant morphological variation observed.

Female. Body more compact than male. Tibiae only dark green in distal third. Antennal club as long as combined length of antennomeres 2–6; eyes smaller, interocular distance/maximum head width = 0.69. Lateral carina of elytra slightly wider, not bulging. Pygidium more triangular. Apical protibial tooth elongated and rounded apically, subapical tooth rounded, protarsomeres thinner; both upper and lower branches of inner protarsal claw smaller than male and almost equal in size.

Measurements. Body length: 4.4–5.0 mm in males (holotype 4.9 mm) and 5.2–6.0 mm in females, greatest width: 2.7–3.0 mm in males (holotype 3.0 mm) and 3.4–3.8 mm in females.

Differential diagnosis. This new species is very similar to *Ischnopopillia parvula* (Benderitter, 1929). Although the male of the latter is unknown, several external differences distinguish the two species. *Ischnopopillia zhengi* is smaller in body length (4.4–6.0 mm) compared to *I. parvula* (7.6–8.0 mm). In *I. zhengi*, the head, antennomeres 1–6, the lateral margins of the scutellum and the elytral suture are dark green, whereas these structures are yellow in *I. parvula*. Additionally, *I. zhengi* exhibits more extensive dark coloration on the tibiae. The secondary stria of the subsutural interstice only reaches the apical half in *I. zhengi*, while it reaches the apical third in *I. parvula*. The secondary stria of interstices 2 and 3 reach approximately the basal third and apical third, respectively in *I. parvula*, whereas both interstices lack continuous secondary striae in *I. zhengi*.

Etymology. This new species is named after Yu-Chen Zheng, a friend of the first author, who collected and donated most of the type specimens.

Distribution. China: Yunnan.

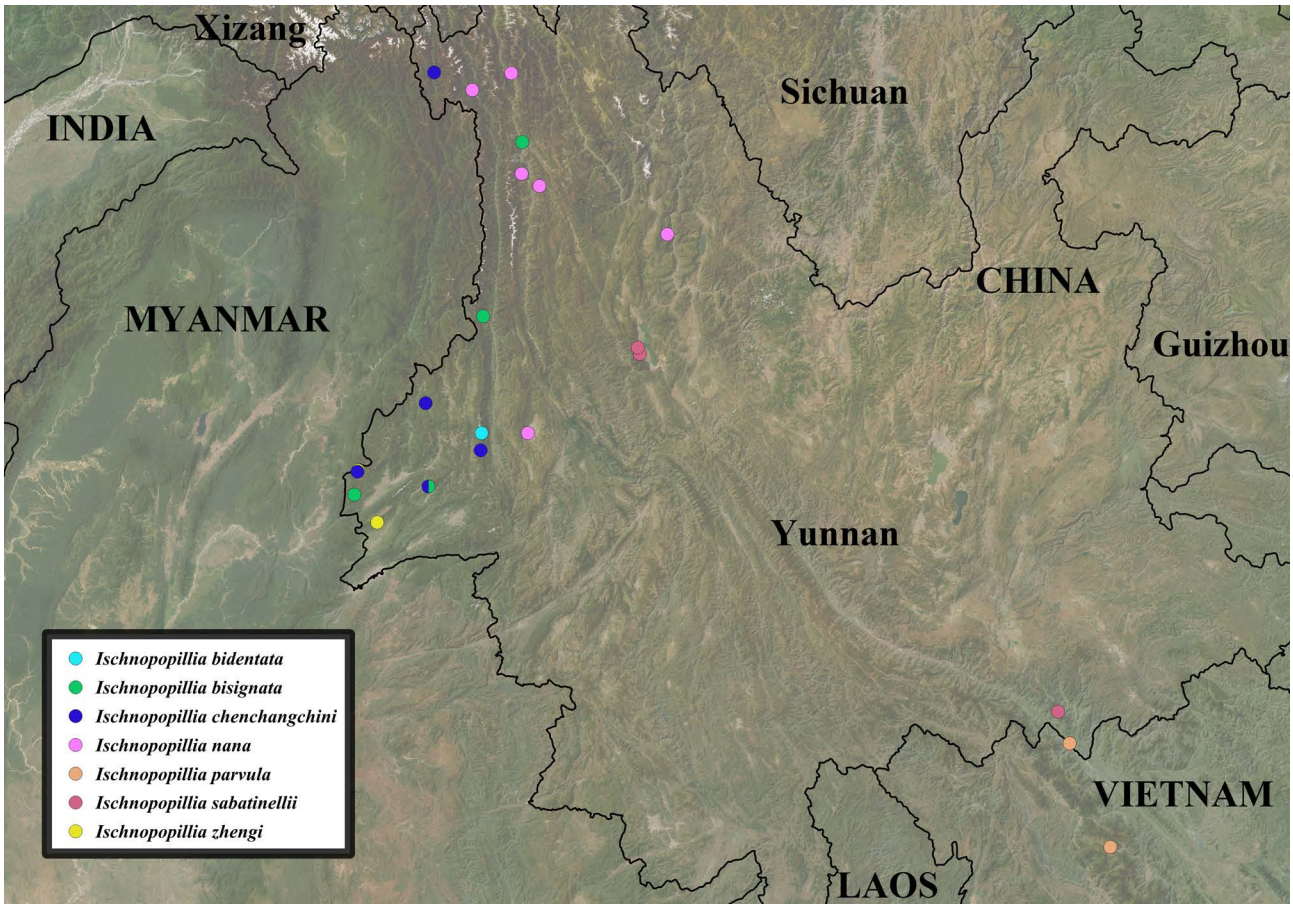

FIGURE 14. Distribution of *Ischnopopillia* spp.

Ischnopopillia nana Lin, 1992 矮人修丽金龟/滇西修丽金龟

Figs 1P, 8A–F, 12D–L, 13–14

Ischnopopillia nana Lin, 1992: 513, 523, fig. 8 [original description, type locality: "Yunnan, Weixi, Pantiange, 2920 m"].

Type material. The holotype is stated in the original description to be deposited in IZCAS, where its presence has not yet been verified. Because some material borrowed by late P. Lin remained unreturned, the holotype might have been located in IZGAS, but it was not found during a visit in June 2024.

Additional material (65♂♂, 32♀♀ + 53 exs.)**. Yunnan:** 1♂ (CCPC) "CHINA, Yunnan, Weixi, Badi [巴迪], 2970m, 2018.VIII.1 Y.-Q. Lu Leg."; 1♂ (ZMPC) "CHINA, Yunnan, Weixi, Badi, 2970m, 2018.VIII.1 Y.-Q. Lu Leg. // INA5"; 4♂♂, 8♀♀ (ZMPC) "CHINA, Yunnan, Weixi, Weideng Tp. [维登乡], Xinhua Vill. [新化村], 3000 m, 2025.VIII.8, local collector leg."; 1♂, 1♀ (ZMPC) "CHINA: Yunnan, Lijiang, Jinjiang [金江] 2016.VII.15-20 Si-Yao Huang leg."; 1♂, 1♀ (ZMPC) "CHINA: Yunnan, Lijiang, Lanping [兰坪], Biyuhecun Vill. [碧玉河村] 27°0′N 99°15′E 2700–3000 m 2023.VI local collector leg."; 6♂♂ (ZMPC) "CHINA: Yunnan, Nujiang Pref. Cikai Town to Dulongjiang [茨开镇至独龙江] 27.735853°N, 98.669347°E 1470 m, 2022.VIII.6, Yan-Dong Chen leg."; 1♂ (CZPC) "CHINE Yunnan Baoshan 2500 m 2-3.VIII.2002 MURZIN & SHOKHIN"; **Xizang:** 17♂♂, 8♀♀ (NHMW) "CHINA, E - TIBET BOMI -W env. 14.7.92 29°53′ / 95°44′ 2700m L.+R. BUSINSKY lgt."; 1♂ (CZPC) "E Tibet, Bomi env., 3000 m 29°52′N, 95°45′E mixed forest, 9-10.VII.1997 Jaroslav Turna leg."; 1♂ (CZPC) "TIBET E. Ningtri Pome 2700 m 2.VII.98 WESTPHAL leg."; 1♂ (ZMPC) "CHINA: Tibet, Nyingchi, Bayi dist., Chongzhe Vill. [重这村], 3100 m, 2018.VII.20"; 14♂♂, 3♀♀ (ZMPC) "CHINA: Tibet, Nyingchi, Bome County, Zhamu Town [扎木镇] 29.8693°N 95.7565°E 2750 m 2016.VII.25 Hao Xu & Jian-Yue Qiu leg."; 2♂♂, 2♀♀ (ZMPC) "CHINA: Tibet, Nyingchi, Bome, Zhamu Town, Gangcun [岗村] 29°52′N, 95°36′E, 2012.VII.17 Xiao-Dong Yang leg."; 3♂♂, 1♀ (CCPC) "CHINA: Tibet, Nyingchi, Bome, Guxiang [古乡] 29°54′N, 95°29′E, 2012.VII.17 Xiao-Dong Yang leg."; 10♂♂, 6♀♀ (ZMPC) "CHINA: Tibet, Nyingchi, Bome, Yongdabu [勇打

不], 3000 m, 2020.VIII.16 Yu-Chen Zheng leg."; 53 exs. (ZMPC) "CHINA: Tibet, Nyingchi, Bome, Yongdabu, 3100 m, 2020.VIII.17 Yu-Chen Zheng leg."; 1♂, 1♀ (SYSU) "Xizang, Bomi County, Taohuagou Scenic Spot [桃花沟风景区], 2716m 29°59′42″N 95°37′15″E 2018-VI-20 Zu-Long Liang, Shi-Shuai Wang"; 1♀ (CCPC) "Xizang Linzhi Motuo 80K 2111m 2016-VII-30 net capture Xiao-Dong Yang Leg. 16Y CCCC".

Additional material. 1♀ (ZMPC) "VIETNAM: Yen Bai prov. La Pan Tan, 2000 m 2024.VII local collector".

Diagnosis. ***Male genitalia.*** Apex of parameres rounded, subapical portion abruptly narrower in lateral view. Parameres without any lateral and medial protrusions, only basal dorsal protrusion present, seam between base of parameres and ventral plate absent. Sclerotized endophallus with a soft apex.

Remarks. This species was previously recorded from West Yunnan, and it is newly reported here from southeastern Xizang. Three phenotypic forms can be separated based on the coloration. The **form I** (Figs 8A–B, 12D–F, 14) is known from Weixi and Lijiang. The males have a black body, antennae and legs. The head and pronotum have strong metallic green luster. The lateral margins of the pronotum are yellow. The elytra are yellow with variable and vague dark pattern. The females are almost entirely pale yellow, with dark markings on the medial portion of the ventral surface, on the metatibiae and occasionally on the lateral portions of the pygidium. The metatarsi are dark brown. The head (excluding the clypeus) and two longitudinal markings on the disc of the pronotum are black with bronze luster. The **form II** (Figs 8C–D, 12G–I, 14) is known from Lijiang, Baoshan and Nujiang. The males differ from the first form in having a generally yellow body with black legs, and the dark markings of the ventral surface are restricted to the medial portion. The head and two elongated markings on the disc of the pronotum are black with strong greenish luster. The females resemble those of form I, but the body color is more vividly yellow, possess much smaller and paler pronotal markings, and the ventral surface shows less extensive dark markings. The **form III** (Figs 8E–F, 12J–L, 13) is known from Bomi in southeastern Xizang. Both sexes are uniformly black with strong green or bronze metallic luster, and each elytron bears an oblique, subtriangular yellow marking of variable size. There is occasionally a lighter form in females, which is predominantly yellow, but with head, two longitudinal markings on the pronotum, lateral margins and suture of the elytra, two elongated markings on the pygidium, broad markings on the medial portion of ventral surface, as well as tibiae and tarsi black with green luster. A rare variation of form III in females has very dense and coarse punctures on the disc of the pronotum. It is yet unclear whether these phenotypic forms are different taxa. The form III has a slightly more up-curved apex of the parameres and a narrower apex of the endophallus, which is somewhat wider and truncated in the other two forms.

Distribution. China: Yunnan, Xizang (new record).

Discussion

In this study, fourteen species are recognized within the *Ischnopopillia pusilla* species group, making it the most species-rich species group within the genus. Species diversity is highest in the western Hengduan Mountains in Yunnan and in the Himalayas, with six species recorded from each region. This pattern may indicate a possible association between mountain systems and diversification within the group, although the mechanism remains unclear, particularly as several species exhibit overlapping distribution ranges. Extensive blank regions are still present in central Yunnan and the eastern Himalayas, indicating that additional taxa may remain undiscovered. However, members of this group are diurnal and cannot be collected by light-trapping, and some species may emerge as late as late August to October, which likely result in current sampling insufficiency. In addition, distinct color polymorphism is observed in several species (e.g., *I. parva* and *I. nana*), and reliable identification requires examination of the male genitalia. Whether such variation reflects the presence of cryptic species requires further investigation using molecular approaches.

The *I. pusilla* group represents the third group defined within *Ischnopopillia*, and it is likely monophyletic, as its species exhibit high similarity regarding both external and genital morphology (see definition). In particular, the

parameres are symmetrical and bear basal protrusions, while the endophallus is dorsally membranous with numerous spiniform endophallites and is ventrally sclerotized. This combination of genital characters constitutes a set of putative synapomorphies for this group. The basal protrusions of the parameres are absent in *I. zhengi* **sp. nov.**, which seems like a transition to the *Ischnopopillia* species of other groups. A ventrally sclerotized endophallus is not unique to the *I. pusilla* group. It also occurs in *Ischnopopillia atronitens* (Fairmaire, 1896), *I. angusta* Lin, 1992 and *I. difficilis* (Fairmaire, 1888), as well as in the popilliine genera *Callistopopillia* Ohaus, 1903 and *Spilopopillia* Kraatz, 1892. These taxa also differ substantially in their external morphology from members of the *I. pusilla* group.

Machatschke (1975) formerly recognized the *I. lateralis* group and the *I. erythoptera* group without specifying the diagnostic characters for either. *Ischnopopillia chalconota* Machatschke, 1975, which was originally placed in the *I. erythoptera* group, should be assigned to the *I. lateralis* group. *Ischnopopillia brancuccii* Sabatinelli, 1997, described after Machatschke's revision, unequivocally belongs to the *I. lateralis* group as well. The species of the *I. lateralis* group are characterized by a pronotal base that is obviously narrower than the base of elytra, the very densely setose pygidium and ventral surface, and the markedly thickened tarsi in males. The endophallus is only partly sclerotized lateroventrally. All the known species of this group are known from the Himalaya, except for the probably mislabeled *Ischnopopillia rubripennis* Machatschke, 1975 from "Nagpore", a lowland city in central India.

The monophyly of Machatschke's *I. erythoptera* group is highly dubious. Because of the basic structures of the aedeagus and the highly variable endophallus, these characters offer little support for a natural group. Nevertheless, the species have typically a black body with blue or green luster, while the elytra are red, orange, or sometimes black. Their elytra are more glossy, and the ventral surface is more sparsely setose compared to the species of the *I. lateralis* group. Sexual dimorphism of the tarsi is restricted to the forelegs, where males have slightly thicker tarsi resembling the structure of the *I. pusilla* group. Future studies integrating morphology and molecular data will be essential to resolve the natural lineage boundaries within *Ischnopopillia*.

Acknowledgements

We wish to extend our sincere gratitude to Chang-Chin Chen, Yu-Chen Zheng, Hao Xu, Guo-Cong Huang, Si-Yao Huang, Yan-Dong Chen, Jian-Yue Qiu, Yi-Hang Li, Jing-Zhe Du, Carsten Zorn and Stefano Ziani for kindly providing invaluable material for this study. Special thanks are also due to Keita Matsumoto, Max Barclay (both NHMUK), Olivier Montreuil (MNHN), Matthias Seidel (NHMW), Matthias Borer (NHMB & NMBF), Hua-Sheng Chen (IZGAS), Pol Limbourg (IRSNB), Bin-Lan Zhang (SYSU), Dirk Ahrens (ZFMK), Jiří Hájek (NMPC) and Vinicius Ferreira (SDEI) for accessing Rutelinae specimens under their curation, and to Carsten Zorn for his thorough review of the manuscript. MZ is deeply grateful to Wei-Xin Liu (SCAU) and Dirk Ahrens (ZFMK) for supporting his research of Rutelinae and to the financial support from the China Scholarship Council during his study in Germany.

References

Arrow GJ 1912: Some new species of the lamellicorn genus *Anomala* from Sikkim, North India. *The Annals and Magazine of Natural History, series 8*, 9 (49): 72–84.

Arrow GJ 1913: Notes on the lamellicorn genus *Popillia* and description of some new Oriental species in the British Museum. *The Annals and Magazine of Natural History, series 8*, 12 (67): 38–54.

Arrow GJ 1917: *The fauna of British India, including Ceylon and Burma. Coleoptera Lamellicornia part II (Rutelinae, Desmonycinae, and Euchirinae).* Taylor & Francis, London, 387 pp.

Benderitter E 1929: Contribution a l'étude des rutelides du Tonkin. *Annales de la Société entomologique de France*, 98: 101–109.

Clermont J 1932: Description d'un genre et d'une espèce nouveaux de Cerambycidae de la sous-famille des Lamiinae [Col.]. *Bulletin*

de la Société entomologique de France, 37 (15), 214–216.

Fairmaire L 1888: Notes sur les coléoptères des environs de Pékin (2e partie). *Revue d'Entomologie*, 7: 111–160.

Fairmaire L 1896: Coléoptères de l'Inde boréale, Chine et Malaysie. *Notes from de Leyden Museum*, 18: 81–129.

Hope FW 1831: Synopsis of the new species of Nepaul insects in the collection of Major-General Hardwicke. *In:* Gray JE (Ed.) *The Zoological Miscellany Vol. 1*. Treuttel, Wuurtz & Co., London. pp. 21–32.

Kraatz G 1892: Monographische Revision der Ruteliden-Gattung *Popillia* Serville. *Deutsche Entomologische Zeitschrift*, 1892: 177–192, 225–306.

Lin P 1965: Results of the Entomological Expedition to Tibet in 1960–61 (Coleoptera: Scarabaeidae, Rutelinae) *Acta Entomologica Sinica*, 14 (4): 390–394. [林平 1965: 西藏昆虫考察报告 (鞘翅目, 金龟子科, 丽金龟亚科). 昆虫学报, 14 (4): 390–394.]

Lin P 1979: A new species of genus *Ischnopopillia* Kraatz from Yunnan (Coleoptera: Rutelidae). *Entomotaxonomia*, 1 (2): 111–113. [林平 1979: 修丽金龟属一新种 (鞘翅目, 丽金龟科). 昆虫分类学报, 1 (2): 111–113.]

Lin P 1981: Coleoptera: Rutelidae. *In*: *The Series of the Comprehensive Scientific Expedition to the Qinghai-Xizang Plateau. Insects of Xizang Vol.1*. Science Press, Beijing, pp. 355–387. [林平 1981: 鞘翅目: 丽金龟科. 见: 青藏高原综合科学考察系列. 西藏昆虫. 第一册. 科学出版社, 北京, pp. 355–287.]

Lin P 1988: Coleoptera: Rutelidae. *In:* Huang F-S (Ed.) *Insects of Mt. Namjagbarwa region of Xizang.* Science Press, Beijing, pp. 249–265. [林平 1988: 鞘翅目丽金龟科. 见: 黄复生 (主编) 西藏南迦巴瓦峰地区昆虫. 科学出版社, 北京, pp. 249−265.]

Lin P 1992: Coleoptera: Rutelidae. *In:* Tibetan Plateu Comprehensive Research Team, CAS (Ed.) *Insects of the Hengduan Mountains region*. *Volume 1.* Science Press, Beijing, pp. 503−524. [林平 1992: 鞘翅目: 丽金龟科. 见: 中国科学院青藏高原综合科学考察队(主编). 横断山区昆虫. 第一卷. 科学出版社, 北京, pp. 503–524.]

Machatschke JW 1957: Coleoptera Lamellicornia Fam. Scarabaeidae Subfam. Rutelinae. Zweiter Teil. *In*: Wytsman PAG (Ed.) *Genera insectorum. Fascicule 199 (B)*. Desmet-Verteneuil, Bruxelles, pp. 1–219.

Machatschke JW 1975: Beschreibungen neuer Arten des Genus *Ischnopopillia* Kraatz und Bemerkungen zum Genus (Coleoptera, Lamellicornia, Melolonthidae, Rutelinae, Anomalini). *Mitteilungen aus dem Zoologischen Museum in Berlin*, 51: 3–17.

Newman E 1838: New species of *Popillia*. *The Magazine of Natural History and Journal of Zoology, Botany, Mineralogy, Geology and Meteorology (N.S.)*, 2: 336–338.

Ohaus F 1903: Beiträge zur Kenntniß der Ruteliden. *Deutsche Entomologische Zeitschrift*, 1903: 209–228.

Sabatinelli G 1997: Nuovo *Adoretosoma*, *Anomala*, *Callistethus*, *Ischnopopillia* e *Mimela* del Himalaya e del Sud-Est Asiatico. *Lambillionea*, 97 (2): 242–258.

Zorn C 2005: Taxonomical acts in the Anomalini initiated during the preparation of the "Catalogue of Palaearctic Coleoptera" (Coleoptera: Scarabaeidae: Rutelinae). *Acta Societatis Zoologicae Bohemicae*, 68 (4): 301–328.

Additional information

Author contributions: Conceptualization: MZ. Project administration: MZ. Resources: MZ & GS. Visualization: MZ. Writing–original draft: MZ & GS. Writing–review and editing: MZ & GS.

Conflict of interest: The authors have declared that no competing interests exist.

Data availability: All of the data that support the findings of this study are available in the main text and Supplement Table (DOI: 10.5281/zenodo.17951440).

Ethical statement: No ethical statement was reported.

Funding: MZ was funded by the China Scholarship Council.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of *ICE* and/or the editor(s). *ICE* and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.